

**THE
RAILWAY GAZETTE**

A Journal of Management, Engineering and Operation
INCORPORATING

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DISPATCH OF "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and machinery for such dispatch, and any reader desirous of arranging for copies to be delivered to an agent or correspondent overseas should place the order with us together with the necessary delivery instructions.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas, as they are stopped under the provisions of Statutory Rules & Orders No. 1190 of 1940

TO CALLERS AND TELEPHONERS

Commencing Monday, November 11, and continuing until further notice, our office hours are:—

Mondays to Fridays — 9.30 a.m. till 3.45 p.m.

The office will be closed on Saturdays

Modern Repair Methods

IF the powers of destruction have grown worse since the last war, the ability to counter them has increased with the development of new materials and new methods. Consider the railways and the effect on them of bombs: If the art of trestling to restore broken bridges may not have advanced greatly in the past quarter of a century, the methods of quickly repairing damaged steelwork have leapt forward with the perfecting of cutting and welding. These processes are, of course, also an important asset in connection with many other items of railway equipment besides bridges. Quick-setting cement is a valuable acquisition of the last twenty years, by the use of which certain kinds of damage can be made good in a fraction of the time formerly necessary. The steady development of mechanical tools and labour-saving devices has enabled track repairs to be greatly accelerated. Excavators have been rushed to the site of certain types of damage, and by their aid lines cleared in a matter of hours instead of days; easily manipulated hopper ballast wagons—a rarity before the last war—are now available in quantity to transport filling material to bomb craters; mechanical tampers, rail saws and drills, vastly improved lighting—usable, of course, only when raiders are not about—are but a few of the tools in the hands of the railway engineer in his fight to maintain transport with the least possible interruption.

* * * *

Recent Welding Progress

Welding is continually gaining ground in every field of railway work. A few years ago welders were engaged mainly, if not exclusively, in the workshop repair of locomotive, carriage, and wagon components, but they are now to be found wherever steel is used, in the construction and maintenance of vehicles, station buildings, bridges, and permanent way. The reasons for this progress lie in the better connection provided by welding, compared with riveting and bolting; the possibility of replacing cast-iron parts by steel; the saving of material; and the possibility of building up worn parts, fully restoring and even improving upon their original serviceability. An article on page 484 of this issue reviews some of the more notable developments in railway welding practices during the last three years. Mention is also made of certain failures of welded structures, but the lesson of these failures has probably been sufficiently well learnt, and the very fact that failures have been so few and have attracted such wide attention and close investigation is sufficient guarantee that the risk, always small, may now be said virtually to have been eliminated.

* * * *

Excess Profit Tax and Industry

On several occasions we have commented upon the effects of the incidence of E.P.T. at 100 per cent. on industrial companies which during the statutory years were still in the process of development. Suggestions have been made, too, that notwithstanding the high patriotic stimulus which inspires the vast majority of the industrial leaders of this country an added incentive to efficient and a valuable check on any tendency to uneconomic working would be provided by the establishment of some slightly lower rate of impost. At the annual meeting of Clifford Motor Components Limited the Chairman, Mr. Alfred Good, made another interesting and constructive proposal as to the future of this tax. He publicly suggested to the Chancellor of the Exchequer that undertakings which are over 90 per cent. on Government work should be allowed a rebate of 20 per cent. of their E.P.T. for important or (for Government work) additional plant or buildings. He suggested that such concession should not in any case be available for dividends, but solely to enable the country's industry to keep fit and ready for the eventual changeover from war to peace conditions. In the

case of Clifford Motor Components Limited, over £100,000 has been spent on plant and buildings for Government work and the addition of 100 per cent. E.P.T. left no cash for capital expenditure.

* * * *

Bengal Dooars Railway

The recently-issued report of the Bengal Dooars Railway Co. Ltd. for the year to March 31, 1940, will be the last twelve-monthly statement to be issued, as, according to the circular of January 16, 1940, possession of the railway will pass to the Governor-General of India on December 31, 1940. A map and description of the system was published in THE RAILWAY GAZETTE of January 26 last. The total length of line operated by the company is 160½ miles on the metre gauge, namely the original line of 39½ miles, and extensions 121½ miles in length. It serves a tea-planting area ranged along the foot of the Himalayas in Northern Bengal, and connects with the Assam main line of the Eastern Bengal State Railway at Lalmanirhat junction. It also works a ferry service. The company was registered on July 30, 1891, the first sections of line were opened in 1893, and the twelve extensions were brought into use at various dates between 1900 and 1931. According to the report, the gross earnings for the year to March 31, 1940, were Rs. 18,92,630, working expenses were Rs. 11,41,135, or 60.29 per cent. of gross receipts, and net earnings amounted to Rs. 7,51,495, or in sterling, less Indian taxation, £47,133. The dividend for the year is 8 per cent., against 6½ per cent. A sum of £1,230,000 on account of the purchase price will be paid by the Government on January 1 next.

* * * *

The Norton Fitzwarren Accident, G.W.R.

Sympathy will be felt throughout railway circles for the Great Western Railway Company in having its excellent record of freedom from serious accident marred by the disastrous derailment which occurred to the 9.50 p.m. Paddington—Penzance express in the early hours of November 4 near Norton Fitzwarren. The usual official inquiry will, of course, be duly held, and its results must be awaited. The company has stated, however, that enemy action had nothing to do with the accident, by far the worst that has occurred on the line since the derailment at Shipton, Oxfordshire, on Christmas Eve, 1874, when 34 passengers were killed. Norton Fitzwarren, it may be mentioned, was the scene of a serious collision on November 11, 1890, when an express ran into a train which had been shunted over to the opposite line to allow another to pass. Ten lives were lost. The accident brought into considerable prominence the whole question of the protection of shunted and waiting trains, and gave rise to several proposals for constructing special rotation locking, intended to prevent the signalman from clearing signals in error in such circumstances. Some of these found a certain amount of favour on a few railways, but interest in them declined with the introduction of track circuits.

* * * *

Jubilee of the City & South London Railway

Fifty years ago last Monday, on November 4, 1890, King Edward VII, then Prince of Wales, formally opened the original City & South London Railway, from the terminus at King William Street, City, to Stockwell, a little over three miles, with intermediate stations at the Borough, Elephant & Castle, Kennington, and the Oval. Public traffic did not begin, however, till six weeks later, on December 18. The undertaking was promoted in 1884 as the City of London & Southwark Subway to develop the Greathead shield system of tunnelling (used experimentally for the little Tower Subway in 1869-70), with powers to make a line to be worked by endless cable between the City and the Elephant. Construction began in 1886 and powers were later obtained to extend to Stockwell. Fortunately for the success of their plans, the directors were eventually persuaded to adopt electric traction, using small three-car trains, seating 96 people, hauled by separate locomotives. There was a uniform fare of 2d. paid at the turnstiles. Access to the stations was by hydraulic lifts. Traffic rapidly increased and

the City station proved incapable of handling it satisfactorily, the approach and gradients being very severe. An extension to Moorgate Street in new tunnels from the Borough was therefore opened early in 1900 and the old terminus remained derelict until converted to an air raid shelter in the present war. The line was later in 1900 extended to Clapham, and in 1901 to Islington, and again in 1907 to Euston, making it about seven miles long. In 1913 control passed to the Underground group and powers were obtained to enlarge the tunnel and introduce modern rolling stock, but this was not done until 1922-1924, a connection from Euston to Camden Town was also made with the Hampstead and Highgate tube. Before this work was done, however, certain improvements such as automatic signalling had been introduced. An extension to Morden was opened in 1926. One of the original locomotives is in the Science Museum, South Kensington, and another, built at the time of the 1900 extensions, may be seen in the concourse of Moorgate Street station, Metropolitan Line. One of the old carriages is in the Railway Museum at York.

* * * *

Blackout on the Trains

The average British citizen is known to resent the too forceful application of rules and regulations, and will often seek to circumvent measures taken for his own protection. On the road it is not unusual to note infringements of lighting and speed regulations on the part of drivers of motor vehicles, once the latter consider themselves out of the range of police supervision, and on the railway during blackout periods we have ourselves often seen passenger trains running through the country with lights showing from the carriages, although at the terminal station all blinds were drawn, and suitably worded instructions are to be found in every compartment. The remedy in the latter circumstance is one that inflicts inconvenience on the many for the offences of the few, namely the curtailment of the more generous system of lighting which has taken the place of the restricted one brought into use when air raids first became numerous. The companies have gone to considerable expense in providing shaded lights, and, in general, passengers have been fully appreciative of the efforts made. If, however, the rule which requires the blinds to be kept drawn during blackout periods is to be infringed, then the benefits of the improved lighting arrangements may have to go.

* * * *

Express Stops in Outer Suburbs

In our issue of October 25 an editorial article called attention to the desirability of introducing stops at outer London suburban stations into the schedules of long-distance expresses, not merely as a war measure, but as a matter of future policy. The new L.M.S.R. timetables, operative from October 28, disclose the welcome fact that this principle has been adopted, and that with the exception of the up night expresses, the day Royal Scot, and one or two other trains, all up expresses are now calling at Watford to set down passengers. The daytime exceptions are in each case immediately followed by other fast trains calling at Watford, with which the former connect, so that in the up direction this stop is now a standard facility. In the down direction a number of Watford calls are introduced; in addition to the 8.30 a.m. Liverpool and 8.45 a.m. Wolverhampton expresses, which already stopped there, the 11.30 a.m., 4.25 p.m., and 7.5 p.m. to Birmingham and Wolverhampton, the 1.5 and 4.5 p.m. to Blackpool, and the 8.45 p.m. to Chester, all have Watford stops introduced into their schedules. Some of the trains concerned are slowed down by 5 min. to compensate for the extra halt, but this deceleration is of minor importance relatively to the value of this new concession, for which, we venture to forecast, there will be a permanent demand.

* * * *

An Important U.S.A. Merger

The merger, effected on September 13 last, and briefly reported in the October 18 and 25 issues of THE RAILWAY GAZETTE, of the Gulf, Mobile & Northern and Mobile & Ohio Railroads of the United States, is of no small importance. The combined 2,026-mile system has a 749-mile main

line from St. Louis to New Orleans, consisting of 261 miles of the M. & O. from St. Louis to Jackson, 453 miles of the G.M. & N. from Jackson to Slidell, and 35 miles from Slidell to New Orleans leased by the latter company from the New Orleans Great Northern. There are also two routes between St. Louis and Mobile, using M. & O. tracks as far south as Jackson, and there separating, the previous M. & O. line continuing for 387 miles *via* Meridian, while the G.M. & N. line from Jackson to Mobile *via* Union and Laurel is 409 miles long. In addition, the new Gulf, Mobile & Ohio has trackage rights into Memphis, Tennessee, and Birmingham, Alabama. Serving five states, the constituent companies handled 7,977,888 tons of freight in 1938, 3,977,729 tons originating on their own lines, and 1,979,047 tons being delivered to connecting lines. Both companies have suffered from loss of traffic due to the exhaustion of forest products; from 1920 to 1926 this traffic fell from 63 to 29 per cent. of the freight handled by the G.M. & N., though this company has worked at a profit in every year except the depression period from 1931 to 1934. The M. & O. met its fixed charges up to 1929, but went into receivership in 1932. It was not until 1926 that the G.M. & N. obtained access to New Orleans, but the M. & O. has been a through route between St. Louis and the Gulf of Mexico since 1886. The Mobile & Ohio owns extensive docks, wharf and warehouse accommodation in Mobile.

* * * *

The Late L. F. Loree and the Upper Quadrant Signal

The distinguished American railway administrator, the late Mr. L. F. Loree, whose career was noted in our issue of October 25, took considerable interest at one time in signalling. In 1907, when the question of using the three-position upper quadrant system was coming very much to the fore in the U.S.A. and occupying the attention of the then Railway Signal Association—now part of the Association of American Railroads—in an endeavour to formulate a standard recommended system of signal aspects, he joined with the late Mr. F. P. Patenall, for many years Signal Engineer of the Baltimore & Ohio Railroad, in producing a design of spectacle and semaphore arm which afterwards became very popular for three-position work, and declined in attractiveness only with the coming of the daytime colour-light signal. When this took place Mr. Patenall himself struck out on a path of his own and persuaded the B. & O. to adopt the colour-position-light signal, in which the idea contained in the semaphore is combined with changes of colour. This signal, however, has received little if any support outside its inventor's line, although it undoubtedly possesses certain merits.

* * * *

Civil Aviation in the Soviet Union

Seventeen years have passed since regular civil aviation was established in the U.S.S.R., and today the aggregate length of the Soviet air lines is 88,235 miles, having been increased by 4,350 miles during the past year. Soviet aircraft maintain regular services to the Far North and to the Far East; they fly across the Pamirs, through the Republics of Central Asia, and over the mountain ranges of the Caucasus. This year passenger traffic was opened on the air lines Moscow to Irkutsk, 2,820 miles long, and Moscow to Alma-Ata, 2,222 miles long. Aeroplanes regularly leave Moscow for Leningrad, Kiev, Ashkhabad, Tbilisi, Mineralniye Vody, and other centres. Air communications have now been established on the Kiev—Lutsk—Rovno—Minsk—Pinsk, Belostok—Lida, and Leningrad—Petrozavodsk routes. Soviet aircraft also now maintain services in the new Karelo-Finnish Soviet Republic. Regular air communications are maintained with the recently-acquired territories of Bessarabia and North Bukovina and with the new Baltic Republics of the Soviet Union. The international air services maintained by the Soviet Civil Aviation fleet include Moscow—Berlin; Moscow—Sofia; Moscow—Stockholm; and Alma-Ata—Hami (China). In 1939 the Soviet air services transported more than 307,000 passengers, 11,517 tons of mail, and 39,654 tons of freight. In July, 1940, alone over 40,000 passengers were transported by Soviet Civil Aviation aircraft.

Report on Higher Charges

THE full report of the Charges (Railway Control) Consultative Committee to the Minister of Transport, dealing with the further increase of railway charges as from December 1, has now been issued as a White Paper and throws light which was previously missing on the reasons which inspired the committee to recommend an increase in tariffs smaller than that originally proposed by the Railway Executive Committee and also to make certain important exceptions to any advance. It will be recalled that at the outset the R.E.C. proposed that the general level of charges should be raised by 6·8 per cent. from October 1, bringing them to 17½ per cent. above those ruling at the outbreak of war. The decision of the Minister of Transport, based on the report of the consultative committee, was that charges should be increased by about 6 per cent. which will result in raising the level to 16½ per cent. above that at the beginning of the war. The aim of the proposals of the R.E.C. was to obtain a yield from higher charges by September 30, 1941, which, together with that from advances already made or authorised, would amount to about £44,500,000 and offset increases in costs of that amount. After the public inquiry had commenced, it was possible for Sir William Wood, on behalf of the R.E.C., to amend the original estimate as the result of the experience gained in a full 52 weeks of war operation, and on this basis the total from the proposed advance was shown to be £46,824,000 or approximately £2,300,000 in excess of the required additional revenue. It was then seen that the adoption of the 52 weeks as the basis for determining a uniform percentage increase on all charges to yield the required £44,500,000 would reduce the 17½ per cent. level originally proposed to about 16½ per cent. The first estimate had been based on 39 weeks.

After considering all the evidence submitted to it, the consultative committee reached a number of important conclusions, chief of which was that the intensification of the war effort had resulted in a considerable growth of railway traffic receipts since February, and the average monthly receipts of recent months was materially in excess of the average of the first twelve months of the war. It was felt that the universal confidence in the ability of the country at least to maintain the present war effort, and the production necessary for it, warranted the committee in estimating that railway traffics (excluding passengers) in the future year, even if they did not continue at the level of recent months, would be substantially in excess of the first twelve months of the war. As the position may be reviewed every three months, the committee considered itself fully justified in basing its advice as to the further increases necessary to yield the sum required on a more optimistic view of future railway traffic receipts from merchandise traffic than that envisaged by the amended estimates of the Railway Executive Committee. On the other hand, the committee saw no reason for not adopting the revised estimate of the R.E.C. as far as passengers (excluding the London Passenger Transport Board) were concerned. It also found no sufficient ground for discriminating in favour of any particular class or category of traffic. After careful investigation it found that the further increase of charges should have no appreciable effect on the cost of food. The only exceptions to the general increase which the committee considered justified were season ticket rates and workmen's fares, all ordinary fares on the railways of the London Passenger Transport Board, and demurrage and siding rent charges. Of the first two, it explains that its decision was reached because appreciable hardship would result from any further increase in the cost of such travel and that this could be avoided by the imposition of only a slight additional burden on other classes of traffic—about £2,200,000 in a year spread over traffic receipts of about £200,000,000. As to the lines of the transport board, it was concluded that with season tickets and workmen's tickets unchanged the existing difference between workmen's fares and ordinary fares should not be increased. It is admitted that some difficulties may arise in consequence of further increasing ordinary fares on the main lines and not advancing them on the railways of the board, but they can be surmounted and the committee was informed by Counsel for the R.E.C. that if a uniform percentage increase was not applied discrimination should

be in the way the committee has decided. It was also decided that, after considering the position of demurrage on wages on siding rent charges, these should be excluded from the operation of any Order advancing the level of tariffs.

On one point which was given considerable prominence during and before the hearing—that of the effect of transport cost variations on the general level of prices—the committee declares that on the subject of inflation it has to point out that the question whether charges were to be increased was not a matter with which it was concerned. The function of the committee, as has been explained on several occasions in THE RAILWAY GAZETTE, was confined to the consideration of the estimates and to advising as to the best method of further increasing charges so as to produce the required additional gross receipts. The committee had regard to the matter of inflation so far as was practicable in view of its terms of reference, and it claims that its conclusions met this objection to any further increase in the cost of essential travel of wage earners. Since the report of the committee was compiled, the Minister of Transport has let it be known that the financial agreement with the railways, under which the higher charges are necessary to offset increased costs arising from the war, is to be reviewed because of the Government intention of putting into effect a national scheme of property insurance and the necessity of bringing the railways within the scope of this plan instead of leaving them to be dealt with under the clause which permits them to charge war damage up to £10,000,000 a year to the pool of receipts and expenditure.

* * * *

Western Australian Government Railways in 1939-40

THE five-year financial statement issued by the Commissioner, Mr. J. A. Ellis, in advance of his annual report, discloses a loss for the past year of £300,361, compared with losses of £313,226, £19,951, £166,610, and £57,477 respectively, for the four preceding years. As a result of conditions which have existed throughout the past twelve months, earnings declined by £43,161, but working expenses were £83,241 lower. Interest on capital increased by £27,215 to £1,028,014. The surplus of earnings over working expenses was £727,653, representing a return of 2.73 per cent. on capital, an increase of 0.13 per cent. on the return for 1938-39. The operating ratio was 79.54, per cent., an improvement of 1.36 per cent. on the previous year.

The foregoing improvements in the results were effected despite reduced traffic brought about by world conditions generally, and reflect the policy of strict economy which has been exercised throughout the year. These results have been achieved despite increases in the cost of coal, basic wage increases to staff, and steadily rising prices of commodities in general use throughout the service. Train-miles run during the year totalled 6,262,437, a drop of 459,916. Timetables have been carefully watched and services kept to a minimum, consistent with traffic requirements. Paying goods and live-stock declined by 200,265 tons, and ton-mileage totalled 361,689,595, a decrease of 16,399,892. Goods earnings totalled £2,744,719, a drop of £62,496, but there was a welcome increase of £21,040 in coaching earnings, due to increased country travel, largely brought about by troop and air force movements. The average earnings per ton-mile (goods) was 1.77d., an increase of 0.06d.

A ton-mileage statement issued conjointly with the five-year comparative results shows the variations in paying goods traffic for the two years ended June 30 last. A perusal of this statement shows that reduced tonnages were hauled in all commodities with the exception of wool, water, "C" class and 1st class. The greatest individual reduction was in wheat, of which 671,453 tons were hauled last year as compared with 750,495 tons in the previous year. The leeway on this item is due to less wheat being shipped from the State, and more being left in storage in the country. Wheat held in bins and stacks in the country at June 30, 1940, was 515,600 tons, as compared with 213,000 tons on the corresponding date of 1939. The average haul for wheat increased from 136.23 miles to 147.58 miles and in consequence the earnings

per ton-mile dropped from 1.12d. to 1.09d. Wheat represented 25.25 per cent. of the total tonnage and 27.40 per cent. of the total ton-mileage for the year, and comprised 16.93 per cent. of the earnings. The reduced spending power of farmers due to their wheat remaining unsold has curtailed the quantities of other goods railed to country areas, and this has contributed to the general decline in revenue.

The year under review has been a difficult one, due to the decreased movement of many of the commodities handled, and the results achieved in reducing the expenditure to meet the reduced earnings is a very pleasing feature of the year's operations. Economies introduced include the abolition of some salaried positions, reduction of staff through retirement, death and enlistment without replacement, reduction in train-mileage, Sunday time and overtime, and the removal of staff from certain stations. Further avenues of economy are being exploited, as prevailing conditions indicate that as the war continues the position will become increasingly difficult from a financial point of view.

	Year ended June 30				
	1936	1937	1938	1939	1940
Capital expenditure ...	£25,850,341	£25,990,025	£26,286,115	£26,558,893	£26,736,299
Average miles worked ...	4,358	4,357	4,374	4,376	4,380
Miles open on June 30 ...	4,358	4,357	4,376	4,378	4,381
Average capital cost per miles open ...	£5,932	£5,965	£6,007	£6,066	£6,103
Earnings ...	£3,446,161	£3,462,037	£3,677,850	£3,599,143	£3,555,982
Working expenses ...	£2,488,117	£2,620,093	£2,709,914	£2,911,570	£2,828,329
Surplus over working expenses ...	£958,044	£841,944	£967,936	£687,573	£727,653
Interest charges ...	£1,015,521	£1,008,554	£987,887	£1,000,799	£1,028,014
Deficit after expenses and interest ...	£57,477	£166,610	£19,951	£313,226	£300,361
Operating ratio, per cent.	72.20	75.68	73.68	80.90	79.54
Percentage of net revenue to capital ...	3.71	3.25	3.70	2.60	2.73
Train-miles ...	6,258,437	6,235,741	6,534,855	6,721,453	6,262,437
Passenger journeys ...	12,421,527	12,709,583	12,011,213	11,415,615	10,793,396
Paying goods tonnage ...	2,779,174	2,688,870	2,948,083	2,743,199	2,548,628
Ton-miles, goods & live-stock ...	353,011,099	346,776,601	390,912,912	378,089,487	361,689,595
Average haul, miles ...	122.29	123.92	127.67	132.24	136.03
Coaching earnings ...	£751,769	£751,239	£726,206	£704,300	£725,340
Goods and live stock earnings ...	£2,620,569	£2,636,617	£2,873,896	£2,807,215	£2,744,719
Average receipt per ton-mile ...	1.72d.	1.76d.	1.70d.	1.71d.	1.77d.
Average staff ...	8,734	8,714	8,565	9,020	8,385

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Express Stops in Outer Suburbs

October 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In the editorial article headed "Express Stops in Outer Suburbs" which appears on page 428 of your issue of today, Watford is cited as one of the points at which more of the L.M.S.R. express trains to and from the North should call, in order to facilitate the movements of passengers who otherwise must join or leave the trains at Euston.

As you doubtless know, the number of trains of a long distance and semi-fast character which stop at Watford has been considerably increased during the past year or so, and if more are to be added then it would appear desirable that such trains should call only to set down in the *up* and to pick up in the *down* direction. That, of course, may be your view also.

It is definitely not in the interests of longer distance passengers that the coaches should be crowded with people travelling only between Euston and Watford, or *vice versa*, the result on occasions, in the *down* direction, being that longer distance passengers can only obtain seats after the train has called at Watford. As this station is very well served by local steam and electric trains, there does not seem to be any adequate excuse for permitting the main-line "through" trains to be used by passengers for that destination.

I am, Sir,

Yours faithfully,

CHAS. S. LAKE

PUBLICATIONS RECEIVED

Preliminary Abstract of Railway Statistics. Steam Railways, Express Companies, and the Pullman Company, for the year ended December 31, 1939. Washington, U.S.A.: Bureau of Statistics, Interstate Commerce Commission. 17 in. x 11 in. 59 pp. Paper covers. Price 40 cents net.—This preliminary abstract for the calendar year is compiled by the Interstate Commerce Commission from the annual reports of the principal American (U.S.A.) railways. The totals are provisional and subject to later revision when the final figures appear in the definite statistics for railways for 1939, to be published by the Interstate Commerce Commission at a later date.

Hydraulic Control Valves.—From the firm of Glenfield & Kennedy Limited, Kilmarnock, we have received a copy of a brochure entitled "Modern Hydraulic Control Valves," in which are described some of this well-known firm's products, including the range of Homeyard valves, stop, check, and relief valves, and also reducing valves

and special control valves for high pressures. Many illustrations are given of their applications to meet varying engineering requirements, including rubber works and sheet mill works, steel tube works, and so forth. These are supplemented by illustrated references to the operation of diaphragms, steel furnace doors, and hydraulic crane controls by means of the Homeyard valve installations. In another section of the catalogue reference is made in some detail to hydraulic relief and spring-loaded valves, alleviators, and hydraulic stop and check valves, and some useful data are included respecting the working and test pressures for which standard Homeyard valves are manufactured, accompanied on another page by the dimensions of the valves and some interesting sectional elevations and plans. Altogether this is an excellent example of trade literature, conforming appropriately in style with the character of the firm responsible for it who, not without justification, claim to be hydraulic engineers to the Empire. Railway

engineers are recommended to write to the firm for a copy of this booklet, which is free on request.

Gears and Gear-Cutting. Edited by F. J. Camm. London: George Newnes Limited, Tower House, Southampton Street, Strand, W.C.2. 7½ in. x 5 in. 144 pp. Price 5s. net.—This is a practical and comprehensive treatise of handy size. Both in principle and in practice, the designing of tooth gears and the methods of cutting them have long ceased to be merely mechanical processes and have advanced on scientific lines so that, in many of its forms, the production of mechanical gears now represents an art. From being noisy and inefficient, these mechanisms are quiet in operation, highly efficient and the losses due to friction are low; and there is hardly any aspect of mechanical engineering in which such strides have been made in such a relatively short period of time. This is exemplified in no small measure by the experience gained with motor car design, but there are also numerous other applications and the progress made is the outcome of a great deal of research, metallurgical improvements, and greater precision in the tools used for cutting the gears.

THE SCRAP HEAP

"Just before I was evacuated from France, I was at a railway station which was crowded with refugees and where confusion reigned. A woman came to me and asked me: 'What does R.T.O. mean?' I said, 'I suppose it means something like your *commissaire militaire*.' She said, 'No. It means *Restons toujours optimistes!*' roughly, Let us always be optimists! Well, I think that is a very good motto for us."—*A Special Correspondent in "The Manchester Guardian."*

* * *

"I am thinking of what the railway men have undergone in the goods yards, the docks, the main lines; the way they have kept up the clearances of goods and passengers in spite of the attacks of the enemy. I have seen signalmen perched many feet in the air passing the trains through, the bombs whistling round them. The platelayer repairing the track; breakdown gangs at work—just ignoring all the danger. It fills one with pride and admiration. The movement of goods and passengers has gone on in spite of all that Hitler has done or tried to do. It redounds to the credit of a body of men who readily risk their lives for the common cause.

"Then we must keep the personnel going to and from the factories. The hours of work have had to be lengthened, the movement of people, with the blackout has become a difficult task, and the men on our great suburban lines, our buses, trolleybuses,

and trams have done splendidly. I know how you feel about schedules, spread-overs, and the inconveniences that are caused and the risks when the guns are firing overhead. But in this total war it is recognised that you are in the front line; really what you are doing is joining in a combined effort to secure our ultimate triumph."—*Mr. Ernest Bevin, Minister of Labour & National Service, in a broadcast on October 26.*

* * *

Old gold ranging from wedding rings to broken dentures is beginning to flow into the Montreal headquarters of the Canadian Pacific Railway Employees' Golden Bomber Fund, through which nearly 60,000 employees of the company hope to make their gift to the Royal Canadian Air Force. The goal of the fund, the idea for which originated with Miss G. M. Gowland of the Treasury Department, is \$100,000, the price of a modern bomber. The fund is operated by a central committee in Montreal under the chairmanship of Mr. F. Bramley, the Secretary of the company. The gold itself is being handled by Treasury workers and is being valued by a well-known firm of Canadian jewellers.

* * *

In 1875 Sir Garnet Wolseley reported that a narrow-gauge railway would suffice. "The people," he wrote, "would be quite satisfied with a line over which they could travel at twelve miles an hour, including stoppages." . . . Since

the majority of the colonists had travelled in trains before emigrating to Natal, there was not the same dread of steam locomotion as had been present in early Victorian England. Some there were who feared that, on steep inclines, the boiler might blow up, provided the fire was not extinguished by a head-wind, or believed that it was dangerous to take a seat near the engine in view of the risk of severe scorching. . . . Few Zulus liked to travel with their backs to the monster. The placing of stones on the railway line was doubtless due to the general custom of referring to the engine as an "iron horse." Natives wished to see if the new "horses" could jump obstacles and climb hills. . . . Speeds were inevitably slow. . . . Even main-line trains could be outstripped by inferior colonial ponies over stretches of eighteen miles between two stations. Not infrequently, when a letter had been forgotten, it had been handed to a native who by running had succeeded in overtaking the train. . . . Provided the train was not actually out of sight, it could generally be recalled by wave of the whip or lusty hail.—*From "Portrait of a Colony: The Story of Natal," by Alan F. Hattersley (Cambridge University Press).*

* * *

L.M.S. Railway Publishing Co.,
Dawn Marshalling Yard,
33, Tothill St.,
Westminster,
London, S.W.1.

The above is an exact copy of the form of address to a letter from Bedford which reached our editorial offices the other day.

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

EIRE

Competition for Best-kept Stations

The result of the annual competition for the best-kept stations on the Great Southern Railways was announced on October 10, when the prize-winning stationmasters assembled in the board room to be presented by the Chairman, Sir Walter Nugent, with their prizes. This year there was an innovation by the introduction of a championship class formed from the first prize winners of the different areas in last year's competition. In addition to the Chairman, Major Henry, Deputy Chairman, and the Rt. Hon. James MacMahon, Director, were present, with Mr. W. H. Morton, General Manager, and the chief officers.

The Chairman told the prize winners that the company was proud of the splendid results of the scheme. The appearance of the stations had been completely transformed, and no grounds existed for the criticism formerly heard of the barrenness of the platforms and the drabness of everything along the permanent way. Sir Walter stated that tribute was paid by the travelling public to the definite improvement effected in the short space of four years, to the artistic floral design of station platforms, and to the general improvement in the appearance of the stations. He considered the decision to establish a special championship class fully justified and that the stations had done even better than before.

The prize for the championship, which was won by Gould's Cross, was a silver cup and a gold medal, and the station concerned was remarkable for the flower beds planted out on the cutting slopes adjacent to the station and for the skill in design. Mr. Ryan, the stationmaster, on receipt of the first championship cup with a replica, stated in a brief speech that the presentation of prizes led to still more harmonious co-operation between the staff and the company. Incidentally, he presented the Chairman with a buttonhole of carnations grown at the station.

[Some of the prize-winning gardens are illustrated on page 489—Ed., R.G.]

INDIA

New Railway Lines

During the year 1938-39, 98·68 miles of new railways were opened to public traffic; the whole of this mileage was of metre gauge and lying within Indian States. The new railways are: Jankampet-Bodhan (12·04 miles) on the Nizam's State Railway; Sadulpur-Mohindargarh (56·44 miles) on the Bikaner State Railway; Prachi Road-Kodinar (15·65 miles) on the Baroda State Railway; Khambalia-Salaya (8·81 miles) on the Jamnagar & Dwarka

Railway; and Badeshwar-Rozi (5·74 miles).

At the end of the financial year 1938-39, the new lines under active construction were as follow:—

New Line	Railway	Gauge	Length
Khadro-Nawabshah ...	Jodhpur	Metre	30·72
Jhunjhunu-Loharu ...	Jaipur	"	35·62
Sikar-Bissau ...	"	"	47·88
Hadmata-Jodiya ...	J. & D.	"	27·02
Sind Right Bank ...	N.W.R.	Broad	83·90
Sagar-Talaguppe ...	Mysore	Metre	9·43
Kunkav-Derdi ...	Gondal	"	7·30
Phalodi-Pokaran ...	Jhodpur	"	35·40
Mudkhed-Adilabad ...	Nizam's	"	100·69

Railway Wagons for Coal Transport

There has been of late a considerable improvement in the supply of railway wagons for the Bengal and Bihar coalfields. During the last busy season (December, 1939, to April, 1940), the number of wagons allotted for coal loading exceeded the figures for the same period of the previous year by 36,000 on the East Indian Railway and over 12,000 on the Bengal-Nagpur Railway. The improvement is the result of the measures taken by the Transport Advisory Officer of the Railway Board in collaboration with the two railways and the Director of Wagon Interchange to mitigate the seasonal shortage of railway wagons for the transport of coal. During the last season, the shortage began much earlier than usual owing to the increased traffic demands on all railways at the outbreak of the war.

Acquisition of Company Railways

It is announced that the Railway Board has appointed Khan Bahadur K. Obaidullah, Deputy Director of Finance, to examine and report on the advisability of purchasing the four company-managed railway systems, whose present contracts expire at the end of 1941 and 1942. The contracts due to expire on December 31, 1941, relate to the Assam-Bengal and the Bombay Baroda & Central India Railways. Under the contracts of the Bengal & North Western and the Rohilkund & Kumaon Railways, the Government of India has the option of taking over the railways on January 1, 1943. In all cases, it will be necessary for the Government to give a year's notice to the companies of their intention to exercise their option of purchase.

ARGENTINA

C.H.A.D.O.P.Y.F.

Suspends Interest Payments

A sensation has been caused in Argentine financial and transport circles by the news that the Spanish concern known as the C.H.A.D.O.P.Y.F. (Compañía Hispano-Argentina de Obras Públicas y Finanzas), which constructed and operates the Buenos Aires underground

line from Retiro to Plaza Constitución and is at present engaged on the construction of three other underground lines, had suspended payment of dividends on its 7 per cent. debentures. This development is not altogether unexpected, as ever since its formation its financial methods have been criticised. The greater part of the capital required for the construction of the underground lines was raised by means of these debentures, the interest on which was regularly paid, although the receipts were not encouraging.

Although it was understood that the undertaking had been brought under the control of the newly-formed transport corporation, this now appears not to have been so; the final transfer of the property and assets has been delayed by the difficulty of reaching agreement on the valuation demanded by the directors, which, the corporation stated, was much in excess of the real value of the lines.

Relations with the Corporation

Briefly, the company claims that, under article 80 of the statutes of the transport corporation, that body is under obligation to pay half-yearly to the company the funds to meet the interest on its debentures. In support of this contention the company refers to proposals made in June last for financing the expropriation of the buses and *colectivos*, in which it was suggested that the corporation might request the company to forego for four years the cash advances.

According to a statement issued by the transport corporation, on the constitution of that body, the C.H.A.D.O.P.Y.F. provisionally agreed to incorporation therein, pending the termination of the Spanish civil war, which prevented the company from raising in that country the necessary capital for the construction of the lines. Meanwhile the corporation agreed to make advances for the half-yearly interest on the debentures, and some \$5,300,000 had been handed to the local board of the corporation for this purpose.

The corporation explains that these advances were made on the understanding that the company would eventually come under its control. They were made as interest payments, to be charged to the capital valuation account with interest, on the company's incorporation in the corporation, and deducted from the amount finally agreed. The corporation states that it had neither taken over the company's debentures nor made itself responsible for any of the company's debts. Although the Spanish civil war had been over for some time, the company had shown no disposition to comply with its obligations as to incorporation; the company's failure so far to hand over its property and equipment to the corporation had made it impossible to make the required adjustment of its capital.

Apart from the \$5,300,000 advanced, the company was also indebted to the

corporation for a further \$1,195,000, so that if the customary advance of \$1,900,000 for debenture payments in June had been made, only \$705,000 would be left as an obligation on the part of the corporation, regardless of the capital readjustments which all the entities comprised in the corporation were undergoing. The corporation also refers to the loss on the year's working, and points out that prospects did not indicate that dividends could be expected in the near future. The statement emphasised that if the company was dissatisfied with the conditions governing its incorporation, it had the option of continuing to operate as an independent entity, which it had not chosen to do.

No Intervention by Government

It had been suggested that the President of the Republic might intervene in the matter, but an announcement issued by the Ministry of the Interior stated that the Government was not concerned with the relations between the corporation and the company, but only with its own position as a bondholder and guardian of the public interest insofar as related to the efficient working of the corporation, which it desired to see brought into full operation as soon as possible. The Ministry also pointed out that it was necessary to adjust the company's capital, and that if no satisfactory solution could be reached on this point, the company had the option of continuing to operate as an independent entity.

At the moment of writing the foregoing is the summary of a situation which, unless some *modus vivendi* can be arrived at, seems fraught with possibilities of litigation.

BRAZIL

Coal Resources

The Director of the National Department of Mineral Production has presented a report to the Minister of Agriculture announcing the fact that coal reserves in the States of Rio Grande do Sul and Santa Catharina are considered to be the largest yet known in South America. According to statistics furnished by the Department of Production, coal output in Brazil has developed variably since 1933 as follows:—

Year	Tons	Value Contos
1933	646,075	29,143
1934	730,622	32,997
1935	840,088	40,474
1936	662,196	32,902
1937	762,789	40,054
1938	907,224	48,297
1939	1,046,975	54,288

Last year the total was made up of 1,768 tons from Paraná, 204,181 tons from Santa Catharina, and 841,026 tons from Rio Grande do Sul, where, in all, some 39 pits are at present working, namely, 1 at Barbosas in Paraná; 26 at Cresciúma, 1 at Orleans, 4 at Urusunga in Santa Catharina; 5 at Bagé and 2 at São Jerônimo in Rio Grande do Sul. The last two are the most important in Brazil.

The report points out, however, that the coal in general is of inferior quality

with 35 per cent. shale and 8 to 15 per cent. pyrites.

The coal found in Santa Catharina is suitable for the manufacture of coke similar in many respects to the type largely used in South Africa and Japan. As yet, however, it has been most unsatisfactory as locomotive fuel, though all new locomotives are being fitted with special fireboxes and grates in the hope of using national coal to greater advantage. It seems evident, however, that some considerable time must elapse before the consumption of national coal by the railways can influence to any great extent imports from England, despite the fact that difficulties in regard to shipping, as a result of the war, are bound to stimulate experiments with the national product.

N.W.R. Improvements Society

The North Western Railway Improvements Society, controlled by the Paulista Railway in accordance with a contract with the Federal Government dated August 18, 1934, fulfilled all its contractual obligations in 1939 and produced a net profit of 1,351 contos, of which 1,013 contos were credited to the Paulista Railway.

BALTIC STATES

Line to New Lithuanian Port

A new standard-gauge section of railway was recently completed and brought into operation by the Lithuanian State Railways between Darbenai (Dorbyani)—on the Klaipeda (Memel)—Mazeikiai—Siauliai line—and Svetoji Port, at the mouth of the river Svanta. Since the cession of Memel to Germany, Svetoji has been the only port left to Lithuania capable of development.

Subsequent to the war of 1914-19 the Lithuanian State Railways have operated this main line from Siauliai

to Memel, which includes the 34-km.-long section from Vainode to Kaletti, inside Latvian territory, as an alternative route to the Siauliai—Pogegen (Pagegiai)—Memel and Siauliai—Telsiai—Kretinga—Memel lines—which are entirely in Lithuanian territory. The newly-constructed branch forms the only rail communication with the new Baltic port.

The Siauliai—Darbenai line also includes part of the 37-km. Laizuva—Luse section, of the Latvian Riga—Liepaja (Libau) line inside Lithuanian territory. Lithuanian railways were all converted to the standard gauge after the last war, but most Latvian railways remained the Russian 5 ft. 0 in. gauge. This Riga—Liepaja line was, however, one of the few sections which—owing to the fact that it connected with the Lithuanian lines, and provided part of a through route into Germany—was converted to standard gauge. Lithuania and Latvia jointly worked the two border sections mentioned common to a main line in each country.

Conversion of Gauge

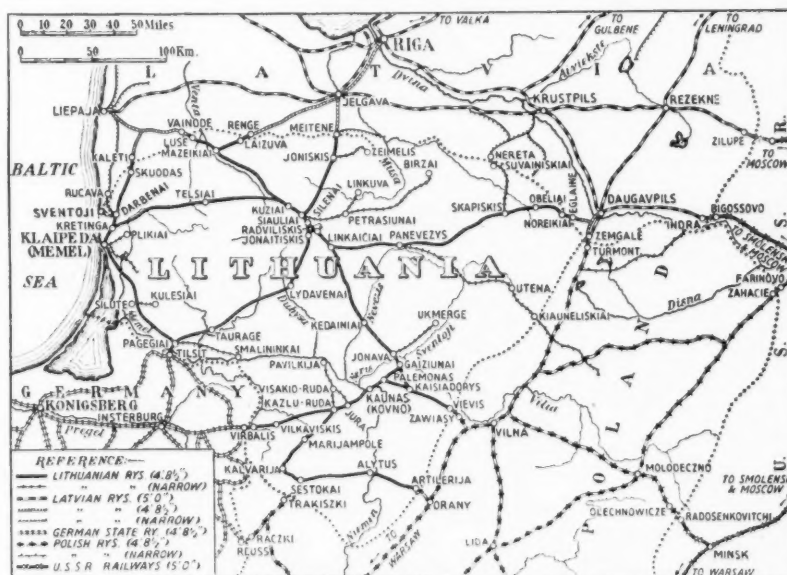
It is not yet known whether the Lithuanian railways like the standard-gauge Latvian sections will be reconverted to the 5-ft. gauge now that both countries have become part of the Soviet Union, but it is reported that the conversion of all Latvian 4 ft. 8½ in. gauge railways connecting with Lithuanian lines, to the Russian 5 ft. gauge, is proceeding steadily.

SWEDEN

State Railways Working Results

During the first five months of 1940 the State Railways showed the following operating results as compared with those for the same period in 1939:—

	1939	1940
Passengers	19,400,000	21,000,000
Passenger revenues	Kr. 32,500,000	Kr. 38,000,000
Goods revenues	Kr. 66,000,000	Kr. 76,000,000



Sketch map showing Lithuanian and Latvian connecting lines

RECENT PROGRESS IN RAILWAY WELDING PRACTICE

A brief review of development in the past three years

By O. BONDY

WELDING, having passed the experimental stage, is now used extensively in the construction of goods and passenger vehicles, locomotives, and railcars. During the last couple of years the London Passenger Transport Board has been taking delivery of an order for more than 1,500 new coaches with all-welded bogies and with bodies and frames welded, too, where weight or space had to be saved.¹ The three new trains for the Coronation Scot services of the L.M.S.R. may be cited as up-to-date British examples of passenger stock incorporating a considerable amount of welding.² One of these trains is again on view at the New York World's Fair where it was shown last summer.

Continental examples include the latest express coaches of the Swiss Federal Railways, built of St. 52 steel, and weighing only 1.4 tonne per metre (0.42 ton per foot run); the latest 22-berth sleeping-cars for the Norwegian State Railways, which, despite their length of about 80 ft., weigh as little as 41 tons; the welded oval tubular-girder main line stock built for the French State Railways (now Western Region, S.N.C.F.)³; and the stainless steel electric trains for the electrified short-distance services on the same section of the S.N.C.F.⁴ In many recently-built vehicles hollow sections and pressed steel girders, in addition to ordinary rolled sections, are used in conjunction with welding. Experience gained in aircraft construction has been applied with advantage in such vehicles. The largest goods wagon in the world⁵ has recently been built by Head, Wrightson & Co. Ltd. for the English Steel Corporation, and, having a carrying capacity of 300 tons, is of all-welded construction in high-tensile steel.

The new I-Do-1 electric express locomotives, Class "E 19," of the German State Railway,⁶ designed for a sustained maximum speed of 180 km.p.h. (112 m.p.h.) with a 350-ton train, has a welded body by means of which a saving in weight is effected to compensate for the heavier electrical equipment needed to develop the increased power as compared with the previous "E 18" locomotives. In the U.S.A. welding is widely adopted for the construction and maintenance of locomotives and rolling stock. Welded fireboxes, smoke-boxes and tanks on locomotives and tenders are to be found. The Delaware & Hudson Railroad has welded a large boiler throughout as an experiment, and the extent to which welding has gained ground in American railway practice is shown by the fact that the railways of the U.S.A. used 700 per cent. more welding electrodes and filler rods in 1937 than in 1933.⁷ A welded steel trailing truck,⁸ built at the Newport workshops of the Victorian Government Railways, Australia, weighs barely half as much as a similar one of cast steel; moreover, the welded construction was cheaper, and it is expected that repairs will be effected more easily and at less expense.

Interesting applications of welding in the repair and rebuilding of locomotives are to be found in the construction of welded cylinders to replace cast cylinders on French railways⁹ and on the German State Railway, partly on grounds of urgency—the delivery period would have been twice as long for cast cylinders—and partly for reasons of economy. As further advantages of these welded steel cylinders, it is claimed that no cracking due to thermal stress is to be expected; that such damage as occurs can be repaired easily by welding without pre-heating; that in cylinders built from plate, only the inserted running sleeves or liners have to be changed, whereas complete replacement of cast cylinders is necessary after a certain amount of wear has occurred on the cylinder walls; and that the welded construction saves from 25 to 30 per cent. in weight, compared with cast cylinders.

Buildings

Satisfactory experience in the use of triangular section all-welded purlins for the roofing of Kalka station on the North Western Railway of India,¹⁰ led to their adoption in new passenger shelters at Delhi, Khanalampura and

Karachi. In the latter instance, 3 in. \times 3 in. \times $\frac{5}{8}$ in. angles are used at the apices of the triangular purlin, with continuous bent round bars of $\frac{3}{4}$ in. diameter as bracing, connected to the angles by $\frac{1}{4}$ -in. fillet welds. These purlins are light and cheap, and are of course built in the workshops. Larger welded station buildings have been built at Berlin (Zoological Gardens) and Mainz¹¹ both remarkable for the use of all-welded two-pin frames of 34-m. (113-ft.) span.

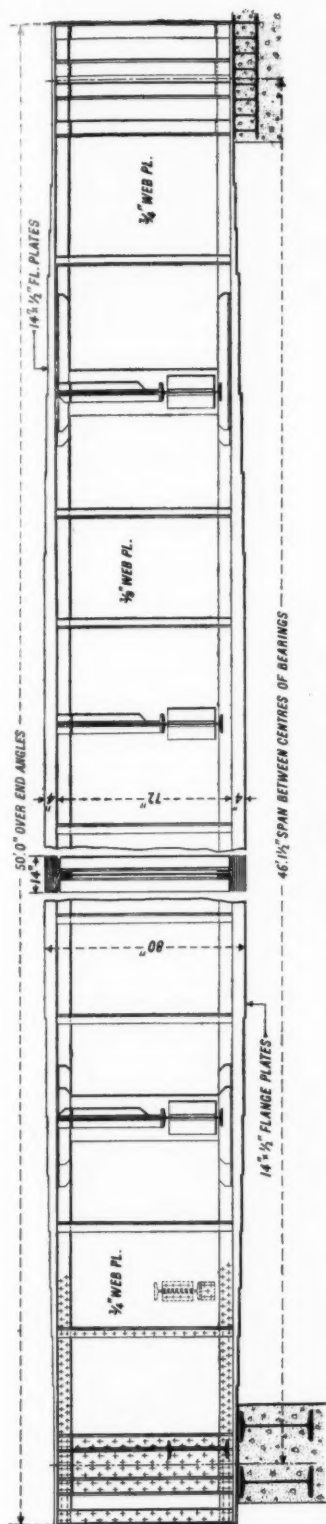
Welding is used on a large scale in Germany in the construction of steel masts for transmission lines and lamps, saving of steel being a predominant consideration. Special sections are used in masts built by the Krupp Werke, but the Weserhütte concern uses angle iron with unequal sides, and the Mannesmannwerke uses tubular sections. In some instances, the saving in steel by the use of welding instead of riveting amounts to 37 per cent. In Belgium welding is extensively used for station roofs and for signal gantries.

Bridges

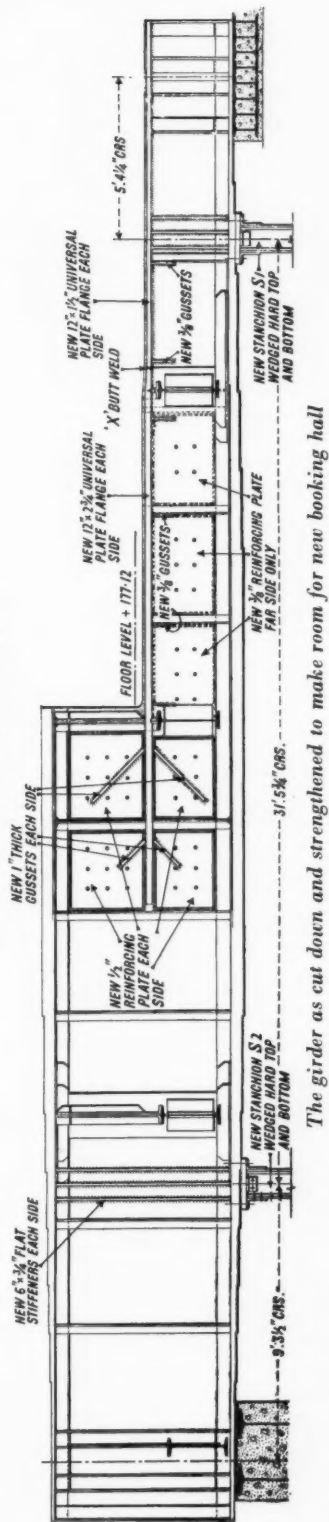
The first all-welded plate girder bridge built by the London Passenger Transport Board carries the Hammer-smith & City Line over Ladbroke Grove, Kensington,¹² and was brought into use on August 28, 1938. This bridge comprises three main girders 5 ft. 7 in. in depth (5 ft. 11 in. at the centre) and 59 ft. 8 $\frac{1}{2}$ in. span, built from plates of different thicknesses, with heavy section 10 in. \times 8 in. joists at 1 ft. 8 in. centres. During the deflection test, the most heavily loaded centre girder showed a deflection of only $\frac{3}{8}$ -in.

The second such all-welded L.P.T.B. bridge carries car depot lines over a roadway at Hainault.¹³ It has two main girders 6 ft. in depth and 54 ft. 3 $\frac{3}{8}$ in. and 51 ft. 3 $\frac{3}{8}$ in. in length. A heavy cross girder 34 ft. 5 $\frac{1}{8}$ in. in length and 3 ft. 7 $\frac{1}{2}$ in. deep is so arranged that the deflections of the main girders are as nearly as possible equal. As the bridge is skew and the main girders are not parallel to each other, most of the girder connections are not at right angles and their construction was much easier by welding than it would have been by riveting. The saving of weight is about 20 per cent. compared with a riveted structure.

In connection with the recent reconstruction of the L.P.T.B. Finchley Road station, it was found necessary to make extensive alterations to one of the main girders which carries the ticket hall floor and the superstructure over the running lines. A considerable part of this girder fouled the entrance to the new ticket hall, and the decision was made to weld a new flange at the floor level, and afterwards cut away the top portion of the girder as required. By this process, which so far as we know is unique, considerable economy both of time and money was effected. The girder was 50 ft. long overall and had an effective span of 46 ft. 1 $\frac{1}{2}$ in. Before any welding was done, two new stanchions, one at each end of the girder, were placed a short distance from the existing abutments. Immediately over these, additional stiffeners were welded to the girder and the stanchions were then wedged up tightly top and bottom. In all the operations of welding, with one or two minor exceptions, two welders worked opposite one another at each side of the girder. New reinforcing plates were welded to the existing web of the girder on both sides of the line at which the cut was to be made. These were to take care of the unbalanced forces which would occur owing to the sudden change in section after the girder had been cut. The new flange plate which was welded to the existing web of the girder was in two halves, one half being welded on each side. The flange plates had a joint which was made by a double V butt weld on the site; this weld was 1 $\frac{1}{2}$ in. thick. Half of the top portion was made first; then after chipping the root on the underside, the whole of the bottom portion was completed. Afterwards the top portion was completed. This ensured an even distribution of contractional stress in the welds and maintained at even



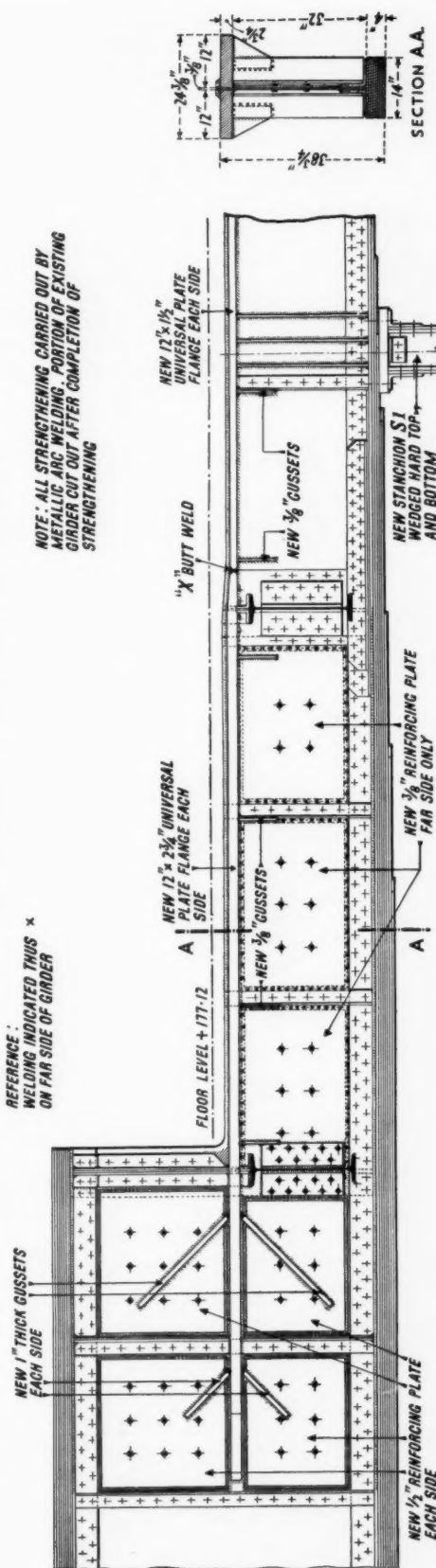
Details of the girder before alteration



The girder as cut down and strengthened to make room for new booking hall

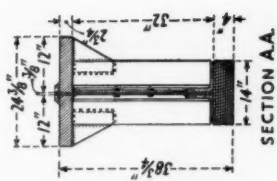
REFERENCE: WELDING INDICATED THUS * ON FAR SIDE OF GIRDER

NOTE: ALL STRENGTHENING CARRIED OUT BY METALLIC ARC WELDING. PORTION OF EXISTING GIRDER CUT OUT AFTER COMPLETION OF STRENGTHENING



Details of the welded strengthening to the cut-down girder

GIRDER ALTERED BY WELDING AT FINCHLEY ROAD STATION, L.P.T.B.



alignment of the plates after the completion of the welding. The accompanying drawings show the details of the girder as it was originally and as it is now. The whole of the work was carried out while the girder was under load and without any interference to passengers or traffic, and records taken at the time show that the stresses were properly taken up by the added material in the cut-away portion of the girder.

The German State Railway has already more than 200 welded bridges in service, the longest span being 54 m. (180 ft.). The first of these was crossed by 230,000 trains during the period 1930 to 1936 and was then taken out of service and dismantled for investigation of its condition, particularly by X-ray examination.¹⁴ No defect whatever was discovered. For railways in England and in Germany only plate-girder bridges have been welded. A further advance has been achieved in France where the C. de f. du Nord has applied welding to lattice bridges.¹⁵ In Russia, too, an all-welded lattice girder railway bridge crosses the Dema river near Ufa. It has a span of 45 m. (148 ft.) and is 5-6 m. (18 ft. 4 in.) wide.¹⁶

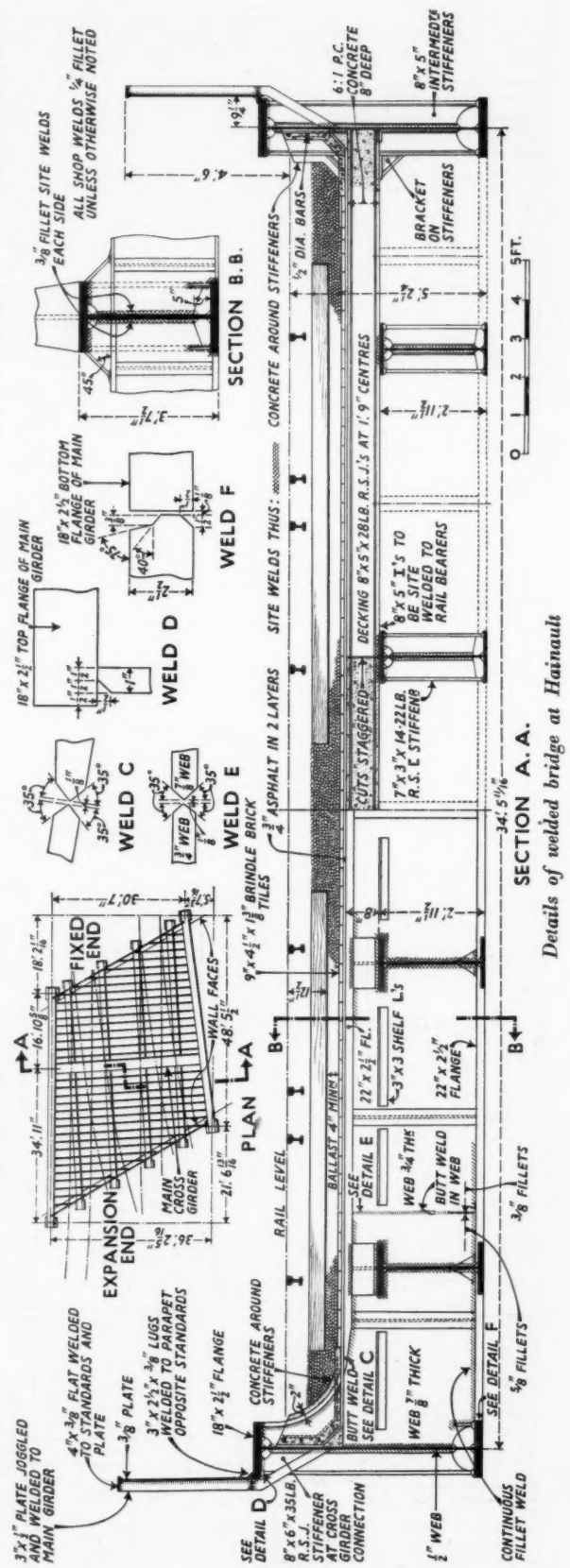
Many existing steel bridges have been strengthened by the welding-on of additional sections, this simple and economical method being used on the railways of the Sudan and Uruguay, among others.¹⁷ The Pennar bridge, on a narrow-gauge section of the Indian M. & S.M. Railway, has eleven openings of 110-ft. span and its 59-year-old structure has been so strengthened¹⁸ by welding additional sections to the bottom chord, diagonals and uprights, that the bridge is now capable of carrying the new 95-ton locomotives (12 tons axle load), whereas formerly it was restricted to 55-ton locomotives.

Mention must, however, be made of failures which have occurred during recent years, attracting widespread attention and causing considerable uneasiness as being the first serious setbacks in the brilliant and successful development of welded bridges. The failures in question were the collapse of three welded road bridges on the Albert Canal in Belgium¹⁹; and the occurrence of dangerous cracks in the main girders of the underbridge of the Hardenbergstrasse, Zoo station, Berlin (1936), and in the girders of the Reichsautobahn (State Motor Road) bridge near Rüdersdorf, Berlin, in 1938. Fortunately, careful examination of these failures has made clear their causes, so that the occurrence of similar mishaps in future can be avoided. In the case of the Belgian bridges there were avoidable defects in the quality of the steel and in the execution of the welding. As regards the German failures, it was found that the chemical composition of the hitherto satisfactory structural steel St. 52 caused such hardening when thick plates were welded, that the material was unable to withstand the shrinkage stresses.²⁰ New regulations²¹ issued by the German Steel Structures Committee, concerning the manufacture of steel St. 52 and its use in welding, should avoid any trouble in future.

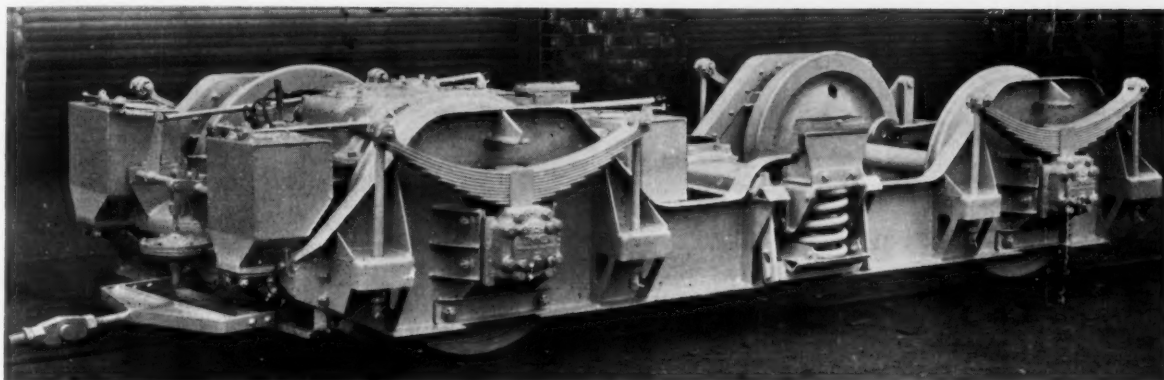
Further progress has been achieved in the examination of welded bridges by X-rays. Addressing a meeting in London, in November, 1938, Dr. R. Berthold stated that there were already 13 X-ray wagons in service in Germany with which 30,000 films had been exposed in 1937, and the number of X-ray testing sets for use in workshops increased from 251 in January, 1938, to 400 in November, 1938. As proof of the practical value of X-ray examination, only 1½ per cent. of the welds examined by the German State Railway were defective in February, 1937, compared with 15 per cent. in January, 1936, the curve showing a uniform decline. The cost of testing is covered by the reduction or elimination of further work on welds which pass the test, and by the higher loading that is permissible in structures subjected to X-ray examination.

Rail Welding

The use of welding continues to extend as a means of increasing the continuous length of rails and reducing the number of joint-gaps to a minimum. The oldest and a thoroughly satisfactory method, Thermit welding, continues to be used successfully on many railways. The Southern Railway used this process in its main line near Hildenborough (March, 1938) and the Boutet welding, a similar process, between Polhill tunnel and Dunton Green (August, 1938), thus producing continuous rail lengths of 120 and 180 ft.²² Up



Details of welded bridge at Hainault



Welded power bogie for articulated railcar, Buenos Ayres Midland Railway

to the middle of the year 1938, the German State Railway had welded 430,000 rail joints by the so-called combined Thermit process, and the number of breakages at welded joints was only 0.17 per cent. At the International Rail Congress, Düsseldorf (September, 1938),²³ Herwig reported on a new Thermit process, representing a further development of the combined process, simplified by the direct welding of the rail ends with omission of the intermediate plate.

Flash-Butt Welding

Electric flash butt welding has gained ground thanks to the technical and economic advantages resulting from the introduction of fully-automatic welding machines. Automatic equipment placed in service last year at the Lillie Bridge depot of the L.P.T.B.,²⁴ has proved completely successful in welding 60 ft. rails into lengths of 300 ft. for tunnel service and 240 ft. for open track. By means of a portable plant, forming part of a train which carries all the auxiliary equipment and supplies, the Delaware & Hudson Railroad²⁵ effects fully automatic flash butt welding of 39 ft. lengths of 131 lb. rail. The greatest length of rail welded by this plant

is 1,700 ft., and these lengths are Thermit-welded in the track after laying; at one place a continuous length of 7,700 ft. has been thus established, the longest rail in open track anywhere in the world. Thanks to the heavy ballast and reliable rail fastening, completely satisfactory performance has been obtained.

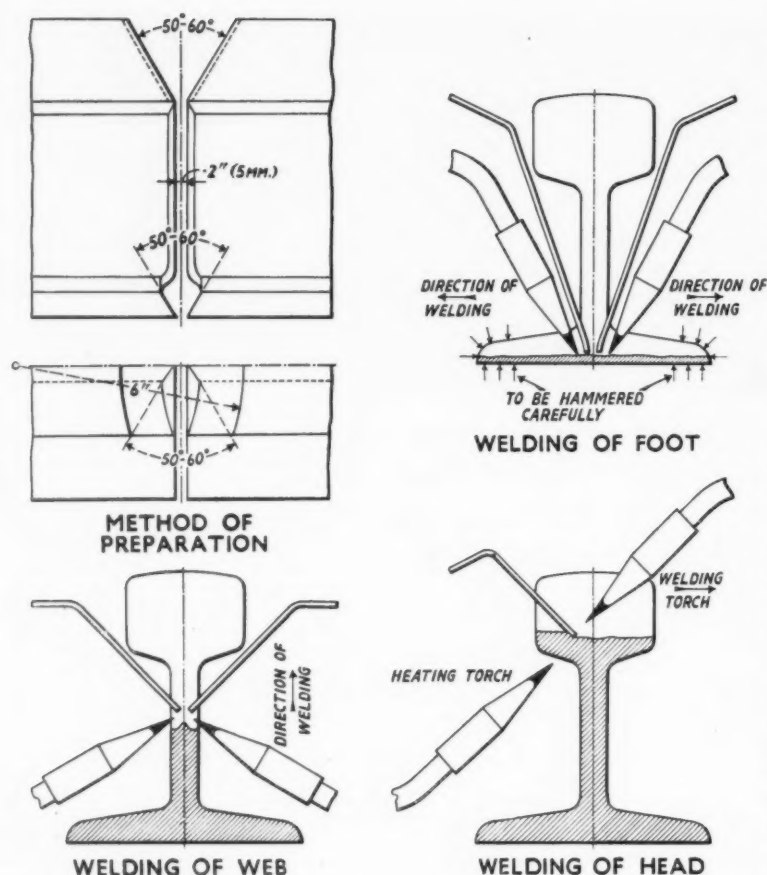
The German State Railway does not weld together new 30-m. (98 ft. 5 in.) rails, as received from the rolling mills, but uses flash butt welding to join old rails which are otherwise too short for re-use but are capable of many years service in welded lengths. Up to July, 1938, the number of flash butt welded rail joints in Germany was about 480,000 and it was announced at the Düsseldorf Rail Congress that only 0.02 per cent. of breakages had occurred, a convincing proof of the merits of the process. This type of welding is also used successfully in Belgium, South Africa and Australia. The Victorian Government Railway has used an automatic flash butt welding machine since 1936, and up to the end of 1938 more than 40,000 welds were so made without defects in 120 miles of rails. Standard lengths on this railway are 225 ft. and 360 ft. for new 90-lb. rails and 180 ft. for old



Left: Cut-out of longitudinal underframe girder of Ganz twin articulated railcar, Central Argentine Railways

Below: All-welded booster trailing truck for "X" class 2-8-2 heavy freight locomotive, Victorian Government Railways





METHOD OF PREPARATION

WELDING OF WEB

WELDING OF HEAD

Oxy-acetylene butt-welding of rail ends

rails. As an experiment, continuous lengths of 4,717 ft. and 4,311 ft. respectively have been formed by welding and no trouble has yet been experienced therein. The New South Wales Government Railways, which before December, 1938, had used the Thermit process exclusively, now use flash-butt welding for rails, except where the work is done in the track.²⁶

Oxy-acetylene Rail Butt Welding

During the year 1938, remarkable results were achieved by the oxy-acetylene welding of rail joints. On the New York, New Haven & Hartford Railroad,²⁷ continuous lengths of 800 ft. were formed from 34 and 39 ft. lengths of 112-lb. rail. Like electric flash-butt welding, the oxy-acetylene welding plant operates on the principle of fire welding, but heating of the rail ends is effected by a movable welding head fitted with several burners. After reaching a temperature of 2,280° F., the rail ends are forced together under a pressure of 2,500 lb. per sq. in. The upset metal is removed by means of a cutting burner and subsequent operations, viz., reheating to 1,380° F., slow cooling in air and grinding of the rail head are similar to those applied to electric flash-butt welds. A crew of 12 men has completed 20 joints a day. As the process is largely automatic and excellent results have been obtained from bending and fatigue tests on the welds, it is expected that further use will be made of this method.

Trials of the oxy-acetylene welding of rail joints have also

been made by the German State Railway and it was announced at the Düsseldorf Rail Congress that none of the 1,000 welds made by this method up to July, 1938, had broken. As developed by the I.G. Farbenindustrie (Griesheim and Knappsack works) the method includes the use of filler rods but dispenses with plates or straps, designed to reinforce the joint but actually reducing its fatigue strength. The rail ends are prepared for welding (as shown in the sketches) by beveling the head and foot to Vee-form, and double-beveling the web to X-form by means of a cutting burner. Welding is carried out by two men who begin at the foot of the rail, build up the web joint by double fillet welding, and finally, weld the head. The deposited metal is annealed by hammering at certain intervals, and the rail head is similarly treated after completing the joint, to make it flush. Heavy rails are joined by this method in 50 minutes, about 15 minutes for preparation and 35 minutes for welding. Success depends on the skill of the welder and on the choice of suitable filler rods. Given proficient operators, the method is very attractive for use *in situ* because of the simplicity of the equipment. Excellent results have been obtained from mechanical tests on joints welded by this method, the endurance strength under alternating bending often equalling that of new rails.

In repair work and deposition welding *in situ*, oxy-acetylene welding is replacing other methods now that filler rods are available which enable worn and damaged rails and crossings to be restored to full serviceability by skilled operators. It has also proved satisfactory in welding together rails of unequal sections and in building up crossings from rails of different forms.²⁸ It must not be overlooked, however, that electric arc welding is still applied successfully to these purposes.

1 THE RAILWAY GAZETTE, September 17, 1937, p. 498 (Electric Railway Traction Supplement), and February 25, 1938, p. 358.

2 *Ibid.*, January 13, 1939, p. 51, and *The Welder*, April, 1939.

3 THE RAILWAY GAZETTE, May 21, 1937, p. 989, and *Revue Générale des Chemins de Fer*, June 1, 1937, and *Organ für die Fortschritte des Eisenbahnwesens*, January 15, 1939.

4 Stainless steel el. sets. Etat.

5 THE RAILWAY GAZETTE, December 30, 1938, p. 1157, and *Welding Industry*, January, 1939.

6 *Ibid.*, April 28, 1939, p. 46 (Electric Railway Traction Supplement), *ibid.*, January 28, 1939, p. 1 (Electric Railway Traction Supplement), and *DI-Zeitschrift*, No. 9, 1939.

7 THE RAILWAY GAZETTE, June 10, 1938, p. 1095.

8 *Ibid.*, November 25, 1938, p. 899.

9 *Ibid.*, January 28, 1938, p. 178, and August 5, 1938, p. 250.

10 *Ibid.*, June 17, 1938, p. 1160.

11 *Die Reichsbahn*, July, 1939.

12 THE RAILWAY GAZETTE, December 16, 1938, p. 1043.

13 *The Welder*, January-February, 1940, p. 3, No. 72.

14 *Die Reichsbahn*, No. 29/30, July 19-26, 1939.

15 *Die Bautechnik*, No. 48, 1938.

16 *L'Ossature Métallique*, February, 1936.

17 THE RAILWAY GAZETTE, June 24, 1938, p. 1201, and November 30, 1938, p. 40 (1938 Overseas Railway Number).

18 THE RAILWAY GAZETTE, May 20, 1938, p. 984.

19 *Ibid.*, June 14, 1940, p. 830.

20 *Die Bautechnik*, No. 48, 1938, and No. 1, 1939.

21 THE RAILWAY GAZETTE, July 21, 1939, p. 101.

22 *Ibid.*, September 23, 1938, p. 536, and *Organ für die Fortschritte des Eisenbahnwesens*, No. 2, 1939.

23 THE RAILWAY GAZETTE, February 11, 1938, p. 271.

24 THE RAILWAY GAZETTE, March 3, 1939, p. 357.

25 *Ibid.*, February 2, 1940, p. 139.

26 *Ibid.*, March 24, 1939, p. 503, and *Railway Engineering and Maintenance*, January, 1939.

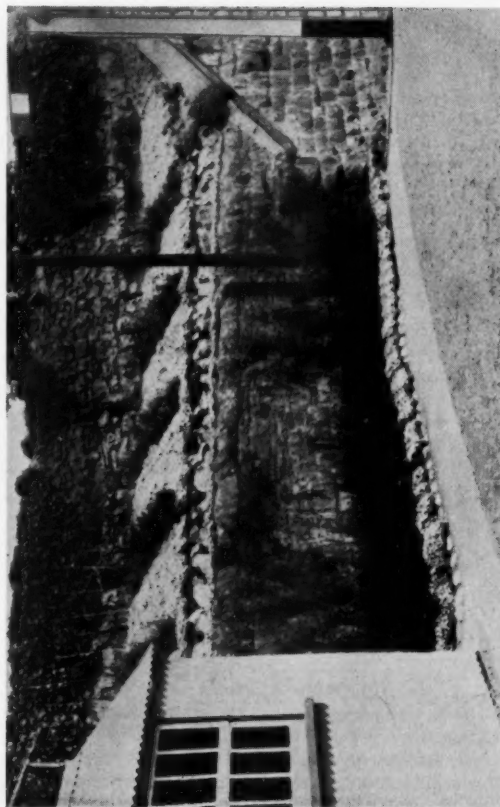
27 THE RAILWAY GAZETTE, January 19, 1940, p. 88.

ARGENTINE RAILWAYS.—At page 454 of THE RAILWAY GAZETTE of November 1, in an analysis of the working results of all the private-owned railways, it was stated in the text that operating costs for 1939-40 were 316,000,000 pesos,

compared with 307,000,000 in 1938-1939. As was correctly stated in the table appended to the article, the position was that the operating costs were 307,000,000 pesos in 1939-40, and 316,000,000 pesos in 1938-39.



Two views of Gool's Cross station garden : first prize championship class. (Prizewinner Mr. W. Ryan, Stationmaster



Cloughjordan garden : third prize championship class



Doonbeg platform garden : second prize, Area No. 6

GREAT SOUTHERN RAILWAYS (EIRE) PRIZEWINNING GARDENS IN 1940

(See Overseas notes on page 482)

British Railways and the War—44

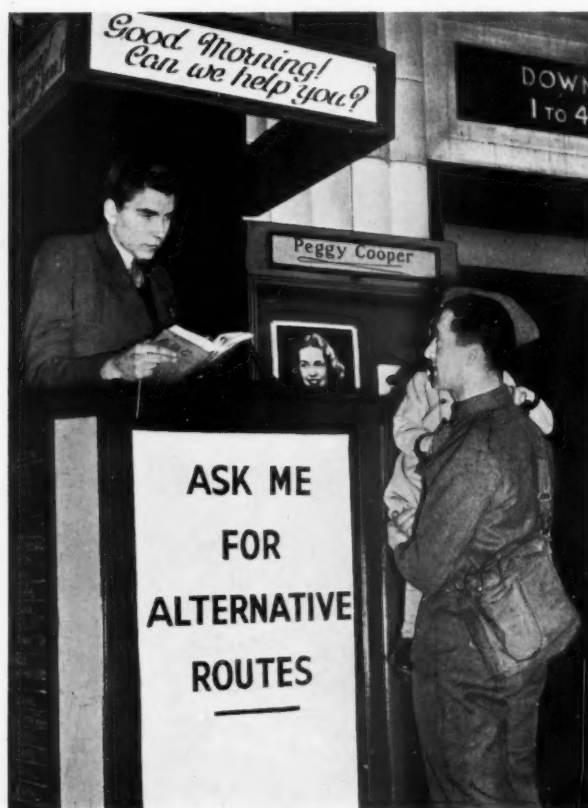


Above: Army personnel manning a locomotive for a military train in a coastal area

Right: One of the information booths at London suburban stations introduced as part of the Railway Executive Committee's scheme to provide travellers with immediate information of alternative transport services, when some normal routes are subject to temporary dislocation. (See last week's issue, page 471)



The first of the London Passenger Transport information bureaux set up in Central London to advise travellers about alternative routes. The kiosk, which is outside the Royal Exchange, was opened on October 31



RAILWAY NEWS SECTION

PERSONAL

Lord Ashfield, Chairman of the London Passenger Transport Board, is to serve for another year as President of the Advertising Association.

Mr. Mervyn W. Shorter has been appointed Assistant Sales Manager of Westinghouse Brake & Signal Co. Ltd., as from November 1.

Sir Robert Knox has been appointed a Director of the Mount Lyell Mining & Railway Company. The Mount Lyell Mining Railway is a Victorian line of 21½ miles of 3 ft. 6 in. gauge (with 4½ miles on the Abt rack rail system) and 22 miles of 2-ft. gauge. It runs from Strahan to Regatta Point and Queenstown. The head offices are in Melbourne.

Colonel R. E. B. Crompton, who died on February 15, left estate valued at £38,329. A portrait and biography of Colonel Crompton were published at page 264 of our issue of February 23, and his pioneer road transport activities formed the subject of a short leading article in our *Road Transport Section* for March 8 last.

RHODESIA

RAILWAY APPOINTMENTS

Mr. G. H. Owen, District Superintendent of Transportation, Broken Hill, is acting Mechanical Superintendent at Headquarters, Bulawayo, *vice* Major W. H. Power on military service.

Mr. F. Barnett, Assistant Operating Superintendent, Salisbury, is acting District Superintendent at Broken Hill, *vice* Mr. G. H. Owen.

We regret to record the death on September 27 in Ottawa, at the age of 92, of Mr. Louis K. Jones, former Assistant-Deputy Minister of the old Canadian Department of Railways & Canals and a well-known Government official who was closely associated with the history of Canadian railroad construction. Mr. Jones was born at Port Hope, Ontario, and was educated at Trinity College School, Port Hope, and Trinity University. He entered the Government service in 1870 and later became Secretary to Sir Collingwood Schrieber, Chief Consulting Engineer, during the building of the Canadian Pacific Railway, which was opened for through traffic on June 28, 1886.

Mr. John Coleridge Patteson, European Manager of the Canadian Pacific Railway, has been appointed Controller General of Transportation to the Ministry of Supply. Mr. Patteson was born in London, Ontario, on December 5, 1896, and was educated at the Model College, Toronto, and at Ridley College, St. Catherine's, whence he entered the Royal Military College of Canada, Kingston, Ontario. He served overseas with the Canadian Field Artillery from July, 1916, to September, 1919. He was Assistant Passenger Manager, Furness Withy & Co. Ltd., New York, in that firm's Bermuda and West Indies services, before joining the C.P.R. as Assistant General Agent at New York. Later he was General Agent for the C.P.R. Passenger Department at Philadelphia. Afterwards he became General Agent for the Steamship Department first in Chicago, and in January, 1935, in Toronto. Mr. Patteson next became Assistant to the late Sir George McLaren Brown in London, and succeeded him on November 1, 1936, as European Manager. Mr. Patteson possesses not only extensive business experience in both

Europe and America, but also direct family antecedents noteworthy in Canadian business. His father was formerly Manager of the Molson's Bank in London, Ontario, and latterly Ottawa, before retiring some seven years ago. His grandfather, who came from Hambledon, Hampshire, went to Canada soon after leaving Oxford, and for many years practised law before founding the *Toronto Mail* of which he was the first Editor. He never lost touch with England, returned every year for a visit, and took the first English cricket team out to Canada.

Mr. W. A. J. Day, Assistant General Manager (Technical), South African Railways, has retired on reaching the age limit. Mr. Day, who was born in England and educated at Bedford Modern School, began his railway career in 1896 as a premium apprentice at the Crewe works of the London & North Western Railway. After the completion of his apprenticeship he continued until 1903 in the electrical department of the railway. He joined the staff of the Central South African Railways in 1903 as a draughtsman in the Chief Mechanical Engineer's locomotive drawing office at Pretoria, and served in the same capacity in the workshops drawing office from 1904 to 1909. From 1909 to 1918 Mr. Day continued as draughtsman in the locomotive and carriage and wagon drawing office, the machinery, and plant drawing office, and the indent's office of the Chief Mechanical Engineer's department. In 1918 he was promoted to be Assistant to the Mechanical Engineer at Durban, and in 1926 to Mechanical Engineer at Pietermaritzburg; later he was transferred in a similar capacity to Uitenhage. In 1929 he was appointed

Mechanical Engineer at Pretoria. Mr. Day came to London in 1930 as Advisory Engineer at South Africa House. He remained here until 1932 when he returned to South Africa as Mechanical Engineer at headquarters. In June, 1935, he was made Assistant Chief Mechanical Engineer and in March, 1936, Chief Mechanical Engineer. Mr. Day became Assistant General Manager (Technical) in March, 1939, and in October, 1939, acted as General Manager during Mr. Watermeyer's absence through indisposition.

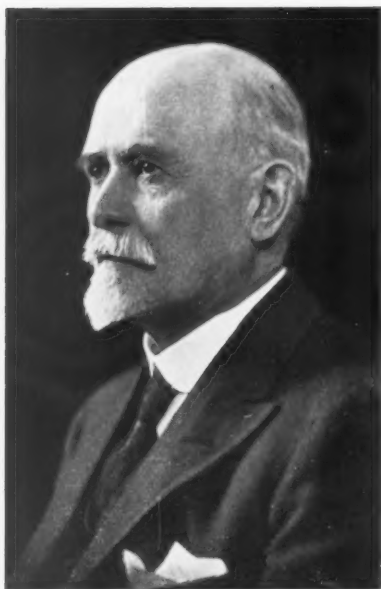
We regret to record the death in Bulawayo on September 6 of Dr. C. H. Dix-Hart, M.B., Ch.B., D.P.H.,



Mr. John C. Patteson

Appointed Controller General of Transportation,
Ministry of Supply

Mr. Jones was born at Port Hope, Ontario, and was educated at Trinity College School, Port Hope, and Trinity University. He entered the Government service in 1870 and later became Secretary to Sir Collingwood Schrieber, Chief Consulting Engineer, during the building of the Canadian Pacific Railway, which was opened for through traffic on June 28, 1886.



[Photo]

[Lafayette]

The late Mr. David Cooper, D.L., J.P.

General Manager, Glasgow & South Western Railway, 1894-1922

M.R.C.S., L.R.C.P., Principal Medical Officer of the Rhodesia Railways. Dr. Dix-Hart held posts at the Bristol Royal Infirmary and the Pensions Hospital, Bath, and during the great war he was for five years on active service, and thereafter proceeded to Southern Africa. In 1921 he joined the service of the Rhodesia Railways as Medical Officer at Bulawayo, and became Principal Medical Officer in 1938. Dr. Dix-Hart played an active part in the work of the St. John Ambulance Brigade in Rhodesia and held the rank of senior District Surgeon.

Mr. David Cooper, whose death in Glasgow on October 28 we recorded in last week's issue, was at one time General Manager of the Glasgow & South Western Railway, and Scottish Director of the London Midland & Scottish Railway. Mr. Cooper was born at Waterside, Ayrshire, in 1855, and began his railway career as a parcels clerk at Waterside station on the Glasgow & South Western Railway. Two years later he was transferred to Maybole station as a booking clerk. In 1872 he went to Glasgow in the office of the Superintendent of the Line, at the Old Bridge Street terminus—four years before St. Enoch station was opened. In April, 1885, he became Assistant to the General Manager, and four years later was made Superintendent of the Line. In 1894, at the early age of 39, he was appointed General Manager, and held this position until his retirement in 1922. During his 28 years as General Manager, there were frequent periods of labour unrest and disquiet in many industrial spheres, but Mr. Cooper's tact and understanding of working conditions were such

that the Glasgow & South Western Railway was able to make steady progress. His ability was recognised by the fact that he was elected Chairman of the Superintendents' Conference and of the General Managers' Conference. During the war of 1914-1919 Mr. Cooper held the rank of Lieutenant-Colonel in the Railway Engineer & Staff Corps. He gave considerable help during the preliminary negotiations for the amalgamation of the railways, and his retirement took place in December, 1922, when his company was absorbed into the London Midland & Scottish Railway. The following March he was elected a Director of the Scottish Committee of the L.M.S.R. He was a Justice of the Peace of the Counties of Glasgow and of Renfrew.

Mr. Charles Frederick Spencer, whose death we recorded at page 469 of our March 29 issue, has left estate valued at £92,488. Mr. Spencer was Chairman of the Leeds Fireclay Co. Ltd., and of Coal Conversions Limited, to which the Leeds Fireclay Company transferred its interest in the British rights of the Plassmann process of low-temperature carbonisation of coal. Mr. Spencer was also Chairman of the Edison Swan Electric Co. Ltd., and a Director of John Brown & Co. Ltd., Thomas Firth & John Brown Limited, and Associated Electrical Industries Limited.

At a meeting of the board of directors of Hadfields Limited held last week, Mr. P. B. Brown, J.P., M.Inst.C.E., was appointed Chairman in succession to the late Sir Robert A. Hadfield, Bart., and Major A. B. H. Clerke, C.B.E., late R.A., was appointed to succeed Mr. Brown as Deputy Chairman. Mr. Brown joined the company in the year of its formation, 1888, was appointed a Director in 1909, a Managing Director in 1917, and became Deputy Chairman in 1930. Major Clerke joined the company in 1911, was elected a Director in 1913, and a Managing Director in 1917.

L.M.S.R. APPOINTMENTS

The following appointments are announced:—

Mr. L. M. Sayers, Assistant Stationmaster, Heysham, to be Stationmaster, Lancaster (Castle).

Mr. D. Mathieson, Stationmaster, Bedford (Midland Road), to be Stationmaster, Bradford (Forster Square).

Mr. J. L. Woodcraft, Stationmaster, Low Moor, to be Stationmaster, Bedford (Midland Road).

Mr. J. J. Davies, Stationmaster & Goods Agent, Morecambe (Promenade), to be Stationmaster, Low Moor.

Mr. R. Little, Stationmaster & Goods Agent, Maryport, to be Stationmaster & Goods Agent, Morecambe (Promenade).

Mr. W. H. Smith, Head Office Inspector, Office of Divisional Supt. of Operation, Derby, to be Stationmaster, Dudley.

Mr. J. Armitage, Stationmaster, Mirfield, to be Stationmaster, Rochdale.

Mr. G. F. Smith, Stationmaster, Burnley (Bank Top), to be Stationmaster, Mirfield.

Mr. F. T. Hawkins, Stationmaster, Knottingley, to be Stationmaster, Burnley (Bank Top), also in charge of Burnley (Barracks).

We regret to record the death on October 15 of Mr. Fred McDowell. He was the third son of the late Mr. James McDowell, at one time General Manager of the Belfast Steamship Co. Ltd., and nephew of the late Sir Alexander McDowell. Mr. McDowell, who was in his 60th year, was educated at Campbell College and entered the service of the Great Northern Railway (Ireland) at Belfast in 1897. After five years' experience at various stations on that company's system, he joined the London & North Western Railway at Liverpool in September, 1902, and served at a number of stations in that district. Early in 1920 he was appointed to the Chief Goods Manager's staff at Euston, and later was transferred to Dublin as Outdoor Assistant to the Irish Traffic Manager. In 1925 he was appointed Acting Irish Traffic Manager, Dublin, and became Irish Traffic Manager on January 1, 1927. He held this position until December, 1928, when he went to Birmingham as a District Manager. He retired about five years ago on account of ill health.



[Lafayette]

[Dublin]

Mr. Fred McDowell

Irish Traffic Manager, London Midland & Scottish Railway, 1927-1928

Mr. George R. Fairhead has been appointed General Freight Traffic Manager, Montreal, Canadian National Railways, in succession to Mr. R. J. Foreman, whose death we recorded in our issue of October 11. Mr. John Pullen has been appointed Assistant General Freight Traffic Manager, Montreal, and Mr. F. P. Nelson, Freight Traffic Manager, Central Region, Toronto.

Sir John Reith, until recently the Minister of Transport, on whom the King has conferred a Barony of the United Kingdom, has taken the title of Baron Reith of Stonehaven in the County of Kincardine.

Dr. Salvador Oria has been appointed Argentine Minister of Public Works. He was previously a prominent member of the Roads Board.

Sir Leopold H. Savile, K.C.B., M.Inst.C.E., has been elected President of the Institution of Civil Engineers for the 1940-41 session. Sir Leopold has been a Partner in the firm of Sir Alexander Gibb & Partners since 1932.

Sir Joshua Scholefield, K.C., has been elected Chairman of the Railway Assessment Authority for a further term of five years. Sir Joshua, who acted as President of the Arbitration Tribunal at the time of the passing of the London Passenger Transport Act, 1933, has been Chairman of the Railway Assessment Authority since its inception 10 years ago.

Mr. H. R. Gunawardena has been appointed acting Commercial Superintendent of the Ceylon Government Railway in succession to Mr. R. E. Stork, who has retired. Efforts to secure a competent officer locally to fill this post permanently have failed, and the question is being further considered by the Ministry of Communications & Works. Mr. Gunawardena was Assistant to the Commercial Superintendent before he left for a course of training in England.

Simultaneous memorial services to Dr. C. H. Merz were held on November 4 at Christ Church, Westminster, and in Newcastle Cathedral. Dr. Merz and his son and daughter were killed during an air raid in London on October 15. A portrait, an editorial note, and a biography were published in our October 25 issue.

We are glad to record the unconditional release from detention of Mr. E. L. Diamond, A.M.I.Mech.E., M.Sc. As recorded on page 423 of our issue of October 18, Mr. R. R. Stokes, M.P. (Ipswich), asked the Home Secretary, on October 8, whether the case of Mr. E. L. Diamond, detained under Regulation 18b, who, before the war, worked for 13 years on the staff of the Institution of Mechanical Engineers, had yet been heard by the Advisory Committee. Mr. H. Morrison, Home Secretary and Minister for Home Security, replied that the case had not been heard, but that he understood it would be in the near future. Mr. Diamond was released from Brixton Prison on Friday, October 18, the Home Office having promptly acted upon the recommendation of the Advisory Committee, whose Chairman, Mr. Norman Birkett,

K.C., emphasised that there was no suggestion whatever in the papers relating to the case of Mr. Diamond that he had misused his position of trust at the Ministry of Supply, with which Department he had been employed for some months previously.

Mr. Robert Stewart Johnson has been elected Chairman of Cammell Laird & Co. Ltd., Birkenhead, in succession to Mr. W. L. Hichens, whose death we recorded in our issue of October 25. Mr. Johnson retains the position of Managing Director.

Memorial services for Mr. William Lionel Hichens were held on October 19 at North Aston Church, Oxfordshire, after the cremation in London, and in the Chapel of the Church House, Westminster, on October 30. A biography and portrait of Mr. Hichens were published in our October 25 issue.

Railway and Other Reports

Peruvian Corporation Limited.

The corporation proposes to pay on December 2 to holders of the 6 per cent. first mortgage debentures 1 per cent. on account of interest. This payment will be on account of Coupon No. 92 due on April 1, 1936.

Metropolitan Assented Stock.

Glyn, Mills & Co., the trustee and registrar under the trust deed relating to the Metropolitan Assented Stock constituted by Section 89 of the London Passenger Transport Act, 1933, announces that a final interest payment at the rate of 2½ per cent., less tax, on such assented stock (making, together with the interim payment of 1 per cent. made on April 17, 1940, the full interest rate of 3½ per cent. for the year ended June 30, 1940) will be posted to registered holders on November 20.

Shahdara (Delhi)-Saharanpur Light Railway Co. Ltd.

Gross earnings for the half-year to March 31, 1940, were Rs. 5,62,308 or Rs. 80,062 more than for the corresponding period ended March 31, 1939. Working expenses for the half-year were Rs. 2,35,484, an increase of Rs. 40,452, plus Rs. 42,500 (same) set aside to depreciation reserve fund, and the net earnings were Rs. 2,84,324, against Rs. 2,44,714. The operating ratio was 50·56 per cent., against 50·75 per cent. The share of profits due to the Central Government is Rs. 74,496, the net profit for the half-year is Rs. 83,190, and the amount brought forward is Rs. 2,81,203. The dividend for the half-year is at the rate of 10 per cent. per annum (against 7 per cent.) and the carry forward is Rs. 2,76,112.

R. & J. Dick Limited.—The preliminary statement shows a profit for

the year to August 31, 1940, of £42,459, compared with £30,565. The dividend is 10 per cent., against 7½ per cent. for the previous year.

Pinchin Johnson & Co. Ltd.—Interim dividend is 2½ per cent., against 4 per cent.

W. R. Sykes Interlocking Signal Co. Ltd.—Net profit to April 30 was £1,187, against £7,304. Dividend for the year on the cumulative A preference shares for the year to October 31, 1937, takes £499, and the sum of £3,711 is carried forward, against £3,023 brought in. A year ago two years' preference dividends to October 31, 1936, were paid.

Questions in Parliament

Transport of Seed Potatoes

Mr. J. J. Davidson (Glasgow, Maryhill—Lab.), on October 23, asked the Minister of Transport whether he had considered the memorandum from the Scottish Seed Potato Trade Association regarding the disorganisation of seed potato transport; and had he any statement to make.

Lt.-Colonel J. T. C. Moore-Brabazon (Minister of Transport): I have obtained a copy of a memorandum circulated to Scottish members of this House about the refusal of the railway companies to double-sheet wagons of seed potatoes. Owing to the shortage of wagon sheets to meet present requirements, a direction was issued on August 26 last prohibiting the double-sheeting of any traffic. All practicable steps are being taken to increase the supply of sheets, but until there are sufficient for all traffic requiring to be sheeted I am not prepared to except seed potatoes from the direction.

Mr. Davidson: Has the Minister investigated the statement of this association that there are thousands of workers idle who normally produced this sheeting which the railway companies could very easily obtain? Has he also investigated the charge that this transport is being thoroughly disorganised, and does he intend to inquire into this point?

Lt.-Colonel Moore-Brabazon: The question of alternative sheeting is being explored, but my hon. friend will realise that the chief supply came from the Low Countries. As an Irishman, I should like to see potatoes protected, but I do not see why these potatoes should have preferential treatment above everything else. One of the difficulties, as my hon. friend knows, is the shortage of sheeting.

Mr. Davidson: Has the Minister investigated the specific statement that there are 4,000 workers in Dundee unemployed who normally produce this sheeting? If so, does he intend to make any investigation in regard to it?

Lt.-Colonel Moore-Brabazon: I will look into that.

TRANSPORT SERVICES AND THE WAR—63

Reporting air raid damage—German air losses in London attacks—Iraq Government Railways boom—L.N.E.R. and L.M.S.R. winter timetables—British air raids on German and Italian transport objectives—Mobilisation in Canada—Railway disorganisation in the Balkans

Questions which are put to us by readers from time to time about the apparent inconsistency in the form of official information giving particulars of enemy air raids on this country and the resulting damage—especially as affecting transport services—show a certain misconception of the underlying policy evolved by the Air Ministry and the Ministry of Home Security. We do not suggest that this policy is necessarily beyond criticism in its application, but at least any useful criticism presupposes some general knowledge of the principles adopted by the authorities, and accordingly we are grateful to the Minister of Home Security (Mr. Herbert Morrison) and to the Air Minister (Sir Archibald Sinclair) for the following official information:—

Raided towns and districts are sometimes named, sometimes not, because when the raid is in daylight, in clear weather, on a place which the enemy cannot fail to recognise, it can safely be mentioned. But at night, or in poor weather, or even in clear daylight but at a distance from his base, the enemy very frequently may not know where he has been. If he were told in official British news, the information would be a valuable test of his methods of navigation and would help him in future raids. Places which the enemy apparently knows, because he mentions them in his own announcements, are often not mentioned because sometimes German announcements are correct, but often they are quite wrong. Even when they are correct they may be no more than good guesses. It is understood that the enemy often mentions places to try out a system of getting confirmation and denials from us. More particulars of damage are not given by us because these would tell the enemy far too much about the success—or failure—of his various bombs and bombing methods. London is mentioned so often by name, and not other towns and cities, because the enemy cannot fail to know he is over London, even at night, while he often makes serious mistakes about where he is in other parts of the country. A daily total of casualties cannot be given because this figure, taken with other facts in his possession, might sometimes tell the enemy a good deal about the amount of damage he had done and even the targets he had hit. In general, the Government policy is based on the assumption that the enemy knows much less of the result of his raids than he would like to do. Some fact that may seem meaningless in itself may mean a very great deal when fitted into its place in the whole picture. Germany has skilled men building up jig-saw pictures from all his sources of information, including official British communiques, and newspaper accounts, and the Government desire in this country is to give the maximum information to our own civilian population without supplying facts of value to the enemy.

German Air Losses in London Attacks

During the past twelve weeks of attack on Great Britain, the German Air Force has lost three aircraft and fourteen airmen for every one of ours. Since August 8, when the first big air battle was fought around our coasts, fighters, gunners, balloon barrage, and other causes have accounted for 2,433 German bombers and fighters, according to an official statement of the Air Ministry News Service. Of this total, bombers and fighters have been destroyed in almost equal numbers, but the most severe blow which Fighter Command has dealt to the *Luftwaffe* has been the loss of trained airmen. If we allow the usual number of pilots, observers, and air gunners to the various types destroyed, over 6,000 German airmen have been killed or taken prisoner. The Fighter Command has lost only 353 pilots. The weekly figures reveal a gradual weakening of the German effort, despite continuously changed tactics. On August 8, three mass dive-bombing attacks were made on shipping convoys and harbours. The

Germans lost 24 Junkers 87 dive-bombers and 36 Messerschmitt 110 and Messerschmitt 109 fighters. Seven days later 1,000 German bombers and protecting fighters launched the largest attack in the history of air fighting. Their objectives were harbours and R.A.F. aerodromes. At the end of that day the Germans had lost 180 aircraft, and during that one week they lost 472 bombers and fighters—still a record for seven days of fighting. That week their bomber losses were 234 against 162 of their fighters. Of those 234 bombers, 161 were dive bombers—Junkers 87 and 88's. The apparent discrepancy between the total of 472 German bombers and fighters lost and the division into 234 bombers and 162 fighters, which leaves 76 aircraft unaccounted for, is explained by the fact that the outstanding number is made up of one floatplane and 75 unidentified aircraft.

From then onwards the Germans changed their tactics, and the use of the Junkers dive-bombers, hitherto claimed to be Germany's most deadly weapon, has been gradually abandoned. During the second week in September only two Junkers 87's were shot down, and then they completely disappeared until the convoy raid of November 1. Even Junkers 88's—the newest type—have been coming over only in small numbers, but the more or less complete abandonment of the use of bombers for day raiding did not take place until the end of September. On September 7, the Germans opened their *Blitzkrieg* on London, and lost 103 in that battle. On September 15 the *Luftwaffe* made another more desperate attempt to crash Fighter Command defences, but in that attack the Germans lost 185 aircraft, and Fighter Command achieved a new record for a single day's fighting. On September 27 the Germans made one more big effort—their last so far. They increased the proportion of fighter escort to four to one, but still they lost 133 aircraft, of which 91 were fighters. Because of the high cost of this form of air warfare, the Germans decided to change their tactics. Bombers visiting these shores during the day time are now few and far between. In their place the Germans are sending high-flying Messerschmitt 109 fighters carrying only a small bomb load. The German losses have therefore been small, compared with the old scale of slaughter, but we have still had our good days. On October 7, fighters shot down 27, of which 21 were Messerschmitts, and on October 29 there were 33 destroyed.

Appreciation for L.N.E.R. Staff

Mr. C. H. Newton, Chief General Manager of the L.N.E.R., has sent the following message to his staff: "I have pleasure in informing you that at a meeting of the board of directors on October 24, 1940, at which Sir Ronald Matthews presided, the following resolution was passed: 'The board desire to place on record their admiration for the manner in which all sections of the staff of the company have carried out their duties during the past weeks of intensive aerial bombardment, thereby enabling essential services to be adequately maintained under conditions of extreme difficulty and often at great personal risk.' I should like to take this opportunity of conveying my own thanks to the staff for the efforts they have made during the past few months."

Iraq Government Railways Benefit from the War

"It is an ill wind . . ." and the war is undoubtedly raising the revenues of the Government Railways. American articles are now being shipped to Basra *via* South Africa and the Persian Gulf for Turkey. Though additional freight is high it is stated that it is not prohibitive even on such commodities as cinema films and motor tyres. Various forwarding agencies are being established in Basra to facilitate these imports, but rebooking is still necessary at the Syrian frontier, and freight charges have to be paid by consignees

beyond that point, according to the United States Bureau of Foreign & Domestic Commerce organ *Foreign Railway News*.

The Winter Timetables

On Monday, October 28, the winter train services were brought into operation, and new timetable books and sheets were issued by the four main-line railways. Improvements of service, in some cases considerable, have been effected, and in addition to accelerated overall times, a feature of the changes made is the introduction of a number of additional restaurant and buffet car facilities. The principal changes are as follow:—

L.N.E.R.

Substantial improvements have been effected in the long-distance services of the London & North Eastern Railway. The heavily-patronised 10 o'clock group of down expresses from King's Cross is strengthened by a new 9.30 a.m. restaurant car train to Leeds and Bradford, calling only at Peterborough, Doncaster, and Wakefield, and reaching Leeds Central at 1.46 p.m.; this is 65 min. ahead of the 10.10 a.m., and in effect an acceleration of 35 min. Following this, the 9.50 a.m. down Newcastle relief omits its previous calls at Peterborough and Doncaster, and reaches Newcastle at 3.35 p.m., 23 min. earlier; the 10 a.m. Flying Scotsman, while continuing to stop at Peterborough and Doncaster in addition to Grantham, no longer calls at Darlington, and is due in Edinburgh at 6.45 p.m., 11 min. earlier. The 1 p.m. from King's Cross also ceases to stop at Darlington (which is served by the 12.45 p.m. relief), and is due in Edinburgh at 9.50 instead of 9.55 p.m. In view of the decline in late evening travel, the 5.40 p.m. restaurant car express to Hull is transferred to a departure at 1.25 p.m., as a relief to the 1.15 p.m. to Leeds and Bradford, and making the same stops to Doncaster as the latter reaches Hull at 6.30 p.m. The 3.50 p.m. express from King's Cross to Newcastle, hitherto nominally running as a relief train on Fridays only, though actually run on many other days, now becomes a daily dining car express on a much accelerated schedule, calling only at Grantham, York, Darlington, and Durham, and reaching Newcastle at 9.50 p.m.—a gain of 35 min. The 5.25 p.m. to Newcastle leaves at 5.30 p.m., and the 5.35 p.m. to Leeds and Bradford at 5.40 p.m.; the latter gives a connection at Doncaster to Hull *via* Selby, which is only 5 min. slower than the previous through service. In the up direction the stock of the new 3.50 p.m. down Newcastle express is used to reinstate a much-needed mid-morning restaurant car train from Newcastle to King's Cross, leaving at 9.50 a.m., calling at Darlington, York, Selby, Doncaster, and Peterborough, and reaching London at 4.10 p.m. Similarly, the stock of the new 9.30 a.m. down express is used to form a restaurant car express from Leeds Central at 12 noon (with through portions from Harrogate at 11.15 a.m. and Bradford at 11.45 a.m.), stopping at Wakefield, Doncaster, and Grantham, and reaching London at 4.20 p.m. The up Flying Scotsman omits its calls at Darlington, Doncaster, and Peterborough, and is due at 6.30 instead of 7.3 p.m.—33 min. acceleration and an overall journey of 8½ hr. from Edinburgh—while the Newcastle relief follows, instead of preceding it, at 12.55 p.m. (20 min. later), and is due in London at 7.15 instead of 6.55 p.m. The 1.55 p.m. from Leeds to King's Cross leaves at 2.20 p.m., and is due at 7 instead of 6.46 p.m.

On Sundays most of the long-distance day trains are considerably slowed down, to allow for recovery of time from delays caused by permanent way repairs, but an evening improvement is that the 5.20 p.m. from King's Cross to Leeds leaves at 6 p.m., reaching Leeds at 10.19 instead of 10.6 p.m.—an acceleration of 27 min. North of York the evening service to Darlington and Newcastle is greatly improved; instead of the previous gap between 5.20 and 9.30 p.m., the 5.20 p.m. now starts from York at 5.50 p.m., the 3.50 p.m. from King's Cross provides a service at 7.55 p.m., and the 5 p.m. from Liverpool, hitherto terminating at York, resumes its through journey to Newcastle at 9 p.m. In addition to existing services, buffet cars are provided on the 7 a.m. Newcastle to York and Leeds, and the 12.5 p.m. from Leeds to Newcastle; the 9.35 a.m. Newcastle to Edinburgh and the 2.30 p.m. Edinburgh to Newcastle; the 12.50 p.m. Newcastle to Carlisle and the 4.20 p.m. Carlisle to Newcastle; the

4.25 p.m. Edinburgh to Aberdeen and the 9.10 a.m. Aberdeen to Edinburgh; and the 9.20 a.m. Hull to Sheffield and Liverpool and the 4.15 p.m. Liverpool to Hull. Buffet cars are also being run between York and Hull, at 10.10 a.m. and 2.55 p.m. from York and at 12.20 and 5 p.m. from Hull. On the Great Eastern section the 5.40 p.m. special residential express from Liverpool Street to Clacton and Walton, and the corresponding up train at 8 a.m. from Clacton, are withdrawn, but the 8.20 a.m. up now starts at 8.15 a.m., and reaches Liverpool Street at 10.7 instead of 10.26 a.m. Most of the expresses on the Liverpool Street and Norwich services *via* Ipswich have been slightly accelerated on the Ipswich—Norwich section of their journey. Restaurant cars have been withdrawn from the 8.12 a.m. and 5.12 p.m. from Liverpool Street to Norwich, and the 2.10 p.m. up; the cars run hitherto on the 6.40 p.m. from Ely to Liverpool Street *via* Cambridge are transferred to the 4.37 p.m. train. The former is accelerated to reach London at 8.45 instead of 9.13 p.m. The 6.30 p.m. Liverpool Street—Cambridge train has been accelerated 23 min., and a new semi-fast up from Cambridge at 7.58 a.m. has been introduced.

L.M.S.R.

In comparing the L.M.S.R. changes with those of the L.N.E.R., it must be recalled that the former company made no reductions in its train services, as did the latter, in the spring of 1940, in order to facilitate the movement of coal; few changes are therefore needed in the present L.M.S.R. timetable to maintain an adequate war service. The principal development is a new restaurant car express from Euston at 12.15 p.m. to Windermere, with through coaches for Llandudno, which serves to relieve the hard-pressed 10.40 a.m. semi-fast, and is 41 min. quicker to Windermere than the latter; to Preston the only stops are at Nuneaton, Crewe, and Wigan, and Windermere is reached at 6.39 p.m. In the reverse direction the restaurant cars are attached to the 11.15 a.m. from Windermere to Euston, due at 6.41 p.m. (previously 6.36 p.m.). The Glasgow portion of the 10.55 p.m. express from Euston, by which the L.N.E.R. sleeping car service to Edinburgh is run, is now advertised, and is due in Glasgow Central at 9.40 a.m. The Perth portion of the 10 a.m. from Glasgow to Euston, with restaurant car, runs independently throughout from Carstairs, and is due in London 15 min. after the Glasgow train, at 7.5 p.m.; a similar division, not advertised, is made in the down direction, the Perth section leaving Euston at 10.5 a.m. Reduction in the volume of evening travel has enabled the 5.30 p.m. down Liverpool and 5.40 p.m. down Manchester express to run as one train, at 5.30 p.m., with restaurant cars in both portions; and the expresses due hitherto at 9.25 p.m. and 9.35 p.m. from Manchester and Liverpool respectively are also combined, and with an additional stop at Watford arrive at 9.40 p.m. The 8.15 a.m. from Liverpool to Euston calls additionally at Stafford and Watford, and is due at 12.47 instead of 12.35 p.m. In consequence of additional stops at Watford to pick up passengers, the previous 11.35 a.m., 1.10, 4.10, 7.10, and 8.50 p.m. expresses from Euston all start 5 min. earlier; in the reverse direction every up express, with the exception of the night trains, and the Liverpool, Manchester, Glasgow, and Perth expresses due respectively at 6.10, 6.23, 6.50, and 7.5 p.m., stops additionally at Watford and is allowed 5 more min. in running. The 8.20 a.m. down Irish Mail, and the corresponding up train, now due in Euston at 7.40 p.m. with a Watford stop, appear for the first time in the timetable. The up Heysham boat train leaves Heysham at 7.35 instead of 7 a.m., omits all intermediate stops except at Morecambe, Preston, Crewe, Bletchley, and Watford, to set down passengers only, and reaches Euston at 1.15 instead of 1 p.m. A restaurant instead of a buffet car is run on the 11 a.m. Liverpool (Lime Street) to Hull and the 3.55 p.m. from Hull to Liverpool, and new restaurant facilities are provided on the 10.30 a.m. from Bristol to Derby and the 4 p.m. from Derby to Bristol.

Improvements have been effected in the new L.M.S.R. timetable book, making for greater clarity; in particular, every table is numbered, as in the L.N.E.R. book, and the branch reference numbers are to tables instead of to pages. New and clearer heading type has been adopted for the tables, and there have been certain combinations of tables

which considerably facilitate reference. In particular, the Midland Division services from Leeds to Bradford, Hellifield, Heysham, and Carlisle appear in a single table, which logically follows the main-line table from St. Pancras to Leeds. On the Central Division the services from Manchester to both Liverpool and to Wigan and Southport are combined in one table.

London Transport Information Kiosks

In conjunction with the main-line railways, London Transport is opening information bureaux in the City, the West End, and in industrial areas. The object of these

are below the main drainage level and are without water supply. Safety requirements precluded a naked flame and accordingly electric urns are used. It is considered undesirable to establish canteens, as these would result in shelterers surging backwards and forwards along the platforms and corridors to the serious interruption of traffic. Light refreshments are therefore distributed to the shelterers by women who are paid for their services. Tea, coffee, and cocoa are provided at a 1d. a cup, and light refreshments served, during the early evening hours and again between 5 and 7 in the morning. Shelterers are asked to provide their own crockery as it has been found impracticable to arrange for washing and storing such articles.



Refreshments being served to the night shelterers in Holland Park tube station. Central Line

booths, which augment existing enquiry services, is to help passengers to ascertain the quickest and best way of travelling in London and its suburbs, and particularly the best alternative routes if normal transport services are interrupted. Clerks in charge of these booths are supplied with the latest information to enable them to reply to questions, and, in addition, public announcements are posted up as they arrive from headquarters. The first of the London Transport kiosks (illustrated on page 490) was opened outside the Royal Exchange on October 31; the second, at Marble Arch (Stewart's Corner) on November 2; and the third, at Westminster underground station, on November 4.

Amenities for London Tube Shelterers

One of the most difficult problems of London Transport has been that of shelterers in tube stations, but recent arrangements have resulted in sheltering being placed on an orderly basis, so that the least possible inconvenience is occasioned to travellers. The London Passenger Transport Board has agreed that the Minister of Home Security shall erect three-tier bunks at the stations and this will increase the sleeping accommodation available. Space will still be kept for persons who take temporary shelter.

At the request of the Ministry of Food, London Transport has begun the supply of refreshments to shelterers in tube stations, and this will eventually employ a staff of about 1,000. The new organisation was begun with an experiment on a small scale at Holland Park station on the night of October 29. The arrangements were extended to Shepherd's Bush station on November 2; and this week similar provision is being made at three more Central Line stations. At the present time, men, women, and children take refuge every night in a large number of tube stations, all of which

are below the main drainage level and are without water supply. Safety requirements precluded a naked flame and accordingly electric urns are used. It is considered undesirable to establish canteens, as these would result in shelterers surging backwards and forwards along the platforms and corridors to the serious interruption of traffic. Light refreshments are therefore distributed to the shelterers by women who are paid for their services. Tea, coffee, and cocoa are provided at a 1d. a cup, and light refreshments served, during the early evening hours and again between 5 and 7 in the morning. Shelterers are asked to provide their own crockery as it has been found impracticable to arrange for washing and storing such articles.

Extending Tube Station Shelter Accommodation

In a broadcast talk on November 3, Mr. Herbert Morrison, the Home Secretary & Minister of Home Security, outlined the Government shelter policy, and said that deep-level shelter accommodation provided in London by the tube stations was to be extended by tunnelling. He added that work is also to be undertaken in certain other parts of the country where the slope of the ground and the nature of the soil made tunnelling comparatively easy. The London scheme refers to tentative arrangements whereby short tunnels will be bored from certain tube stations so as to increase the space available for shelterers without further interfering with traffic.

District Line Trains During Air Raids

The London Passenger Transport Board found it possible to introduce on October 28 new arrangements concerning the operation of the District Line section between Mansion House and St. James's Park during periods of air raid warnings, and trains are now not necessarily suspended over this section as heretofore. The arrangements are such that it will be possible for trains to continue running "on more occasions than not."

Emergency Thames Steamship Services

The emergency river services between Westminster and Woolwich, provided by arrangement between the Minister of Transport and the London Passenger Transport Board, were discontinued at the end of traffic on Saturday last, November 2. These services were established on September 13. Previous references to them have been made in our issues September 20, page 309, and October 11, page 391.

British Air Raids on Berlin

On the night of November 1-2 the Bomber Command delivered two of the heaviest and most concentrated attacks it has yet made upon Berlin. The German capital has had nearly 30 air raids, and on this occasion again power stations and rail communications were among the chief targets sought. Three important railway points were reported by the Air Ministry News Service to have been repeatedly hit and damaged by heavy high explosive bombs, and incendiary bombs falling among the wreckage are stated to have started some of the largest fires yet seen by British raiders over Germany. The first raid was the earliest so far made on Berlin. It began shortly after 8 p.m. and lasted for about two hours. The Schlesischer station just about 1½ miles east-south-east of the city centre, and the railway yards between the Potsdamer and Anhalter stations, which are even nearer the centre of the city, were the two main objectives. The Schlesischer station was continuously attacked by relays

of aircraft for 30 min., and many tons of high explosive and hundreds of incendiary bombs were dropped on this target. A salvo of high explosive bombs were dropped by one of the attackers on the railway yards near the Potsdamer station, and fires were later caused by incendiaries. The Tiergarten railway station and the goods yards between the Putlitzstrasse and Lehrter railway stations were also attacked. In the second raid that night, which began at 2.20 a.m., important electric supply stations at Klingenberg and Charlottenburg were the objectives. The former was subjected to 15 min. of concentrated bombing, resulting in a large fire which could be seen clearly from one of the attacking aircraft when it was 150 miles away on its homeward journey. Repeated hits with heavy bombs were scored on the Charlottenburg power station and a number of large fires started. In other parts of Germany on the same night attacks were made at Gelsenkirchen on oil plants, and a large refinery at Magdeburg was also bombed. Railway yards at Osnabrück and the Krupp works at Essen were also subjected to attack.

British Bombers Raid Italy

On the night of October 31-November 1, British bombers for the first time attacked Southern Italy. A successful raid was carried out on Naples where an oil depot was bombed, and on a second raid the railway station and junction in Naples was attacked. Although this was the first occasion British aircraft had attacked Southern Italy, as long ago as August 13-14 a large force of R.A.F. bombers made a successful attack on military objectives in Northern Italy. Aircraft factories at Milan and Turin were bombed; railway sidings to the west of the Fiat aircraft works at Turin were hit; and a road and railway junction to the south of Turin were attacked. Railway sidings alongside the Caproni works at Milan also received attention, and a road and railway bridge at Cassano d'Adda was hit. Northern Italy has since been attacked on a number of occasions.

Prisoners of War in Australia

German and Italian prisoners of war have recently arrived in Australia, where they were transported from Great Britain on a prison ship. They were then conveyed by train to an inland internment camp.

Canadian Locomotive Company Expansion

A considerable extension is being made to existing plant of the Canadian Locomotive Co. Ltd., at Kingston, Ontario. Additions represent 54,000 sq. ft. of floor area and will be used entirely for the production of munitions. The estimated cost of these extensions is \$250,000. All locomotive contracts on hand at the beginning of the year have now been completed, totalling 22 locomotives. Mining machinery has been up to the average of former years, and in general the company reports a fairly successful year.

Mobilisation in Canada

The part played by the Canadian railways in the task of moving more than 11,000 troops from inland points to Halifax, speedily yet secretly, just before their departure for Great Britain, has earned the high praise of Colonel the Hon. J. L. Ralston, Minister of National Defence. Sir Edward Beatty, Chairman and President of the C.P.R., recently gave details of the congratulatory letter he received from Colonel Ralston after the successful rail movement, which took place between August 17 and August 24, but which was kept secret until the last of the troops reached Great Britain. The movement, of unusual magnitude, was complicated by great numbers of incoming evacuees at the port and by the fact that military requirements prohibited the advance notice which would accompany any similar large-scale movement in peacetime. Nevertheless, the troops all arrived on time. In expressing the appreciation of his Department, the Minister of National Defence said: "The fact that some thousands of refugees had to be cleared from the port, and also that the detrainments of troops took place only during daylight hours, speaks most highly for the efficiency of your organisation. I especially wish to thank you for the close co-operation of your officials with officers of my Department

in the working out of the various movements allotted to your railway." Similar congratulations were extended to the Canadian National Railways.

Transit Traffic through France

The Vichy Government, since the beginning of October, has required transit permits for all goods sent by rail between Germany and Spain *via* "unoccupied" France. German senders have threatened to send their goods *via* the lines in occupied territory, but transport over those lines is still restricted, and slower than by the other routes, notwithstanding the interruptions caused by the damaged line near Annecy on the Swiss-French border.

A New Railway in Hungary

A fortnight before the imposition on Roumania of the cession of half Transylvania, the last link in a narrow-gauge (2 ft. 6 in.) connection between the Dej—Rodna and the Sighet—Borsa lines, from Salva on the former to Moiseiu on the latter, was completed by the opening of the section Telciu—Moiseiu, 39.6 km. (24½ miles) long. This railway shortens the distance from Dej to Sighet by almost 400 km. (250 miles), compared with the shortest previously existing route, and the plans are to convert the narrow-gauge section to standard gauge at some future date.

Transport in Germany

When, on October 1, the customs frontier between Germany and the Protectorate of Bohemia & Moravia was abolished, all restrictive regulations concerning transport across the border were cancelled, with the exception of those governing passenger traffic. No journeys across the border are yet allowed without a special permit, and permission is given only for proved business journeys.

The Berlin radio announced the other day that the services of 46,000 girl members of the Hitler Youth Organisation had been commandeered for work at German railway stations.

Natural sources state that, when a warning of R.A.F. raids is given in Germany, trains in motion are notified at signal boxes and are then not permitted to stop again until they have passed through the area to which the warning applies.

Owing to the impossibility of transport by sea, an 800-ton generator for the Sungari River power station in Manchuria, said to be the largest yet made in Germany, has been despatched by rail *via* the Trans-Siberian Railway.

Railway Services in the Balkans

International railway connections with Greece, namely, the railway services between Greece and Turkey and between Greece and Bulgaria, were interrupted at 8 p.m. on Monday, October 28. No official reasons were given, but it is understood that this was due to congestion of traffic at Pithion, the junction on Greek territory of the railways from Sofia and Istanbul to Dedeagatch (Alexandropole) and on to Salonika, a congestion due to general mobilisation in Greece.

The Taurus express, which runs across Anatolia, was reported from Ankara on October 30 to be fully booked for many days ahead. Evacuees from Roumania are having to wait at Ankara before proceeding by rail to Basra on their way to their various destinations.

Other reports say that on October 30 there were no international trains running in the Balkans, and that many local services in Bulgaria and Yugoslavia had been suspended.

Since the outbreak of war, in September, 1939, virtually all trade between Greece and Germany has been carried by rail, as the British blockade stopped practically all transport by water to and from Germany. Greek imports from Germany during the first half of 1940 are stated by the American Legation in Athens to have dropped 23 per cent. in value, compared with the same period of last year, but export from Greece to Germany advanced 53 per cent. It is noteworthy that Germany thus far in 1940 has maintained its position as the leading country of origin and destination of Greek foreign trade, despite transport difficulties. Recent imports from Germany have consisted largely of manufactured articles and steel semi-finished products. Greek shipments to Germany have been mainly tobacco (61 per cent. of the total in the first six months of 1940) and foodstuffs.

NOTES AND NEWS

Underground Railway Proposed for Vienna.—A recent report from the American Consulate in Vienna says that the building programme for 1940 of the Vienna city administration includes the construction of an underground railway "as soon as the war is over." Preliminary work is stated to have been begun already.

The Coronation Scot at the World's Fair.—The L.M.S.R. has announced that the Coronation Scot train, which has been on exhibition at the New York World's Fair, has been visited by no fewer than 1,187,000 persons. The Coronation Scot will be stored at Baltimore in the shops of the Baltimore & Ohio Railroad until such time as it can be brought back to this country.

Burma Railways Profit from China Traffic.—According to a Reuters message from Rangoon, dated October 24, the Burma Railways annual report states that, as a result of the China traffic through Burma by the Burma Road, a deficit has been turned into a surplus after nine years. The gross earnings from the China traffic reached £172,500 for the year ended March 31 last.

Railway & Canal Commission Rules.—The Railway & Canal Commissioners have drafted rules applying the provisions of the Railway & Canal Commission Rules, 1924, as amended, to all appeals and proceedings under the Railways (Valuation for Rating) Act, 1930, relating to the undertaking of the London Passenger Transport Board. On account of urgency these rules will come into operation forthwith as provisional rules.

Trading with the Enemy.—The Board of Trade has made a new Order which came into force on November 4, containing 196 additions to the "black list" of traders in neutral countries with whom it is unlawful to have dealings of any kind. The Order is published by H.M. Stationery Office under the title of the Trading with the Enemy (Specified Persons), (Amend-

ment), (No. 12), Order, 1940. (Statutory Rules & Orders, 1940, No. 1870).

East Indian Railway Annuities.—It is notified that on September 30, 1940, a total sum of £8,034,561 was invested for the purpose of providing a sinking fund in respect of East Indian Railway Annuities Class "B"; a total sum of £1,802,601 16s. 6d. for providing a sinking fund in respect of Class "C" annuities; and a total sum of £3,433,613 15s. 1d. for providing a sinking fund in respect of Class "D" annuities.

Two British Railway Accidents.—At 3.52 a.m. Monday, November 4, the 9.50 p.m. G.W.R. Paddington—Plymouth—Penzance express was derailed at the catchpoints on the down relief line at Norton Fitzwarren, just beyond Taunton. The locomotive, No. 6028, *King George VI*, came to rest on its side, and several of the leading coaches of the crowded train were badly damaged. A newspaper train on the down main line was also damaged. It is reported that 27 persons lost their lives and about 20 more were seriously injured. On November 5 the 10.5 a.m. Euston—Perth express, L.M.S.R., collided near Gretna with a goods train at about 7 p.m. The driver of the 10.5 train was killed and a number of persons was injured.

Treasury Acquisition of Canadian Securities.—A group of Canadian securities has now been transferred to His Majesty's Treasury. The transfer is effected by two Orders relating to one large sterling issue, namely Grand Trunk Railway Company of Canada 4 per cent. perpetual consolidated debenture stock. The Orders transferring this stock are: The Securities (Restriction and Returns) (No. 3) Order, 1940, dated October 26, and the Acquisition of Securities (No. 5) Order, 1940, of the same date. Another Order provides for the transfer of approximately 60 issues of Canadian railways and Canadian companies payable solely or optionally in Canadian dollars.

These include Canadian National Railway Company 4½ per cent. guaranteed gold bonds of 1951, 1956, and 1957; Canadian National (West Indies) Steamships Limited 5 per cent. guaranteed gold bonds 1955; and Canadian National Railway Company (successor by amalgamation to the Grand Trunk Pacific Railway Company) 4 per cent. sterling bonds 1962 and 3 per cent. first mortgage sterling gold bonds 1962.

British and Irish Railway Stocks and Shares

Stocks	Highest 1939	Lowest 1939	Prices	
			Nov. 5, 1940	Rise/ Fall
G.W.R.				
Cons. Ord.	38	21½	34½	+1½
5% Con. Pref.	92	71	78½	+2½
5% Red. Pref. (1950) ..	98	83	93½	—
4% Deb.	103	91	104½	+2½
4½% Deb.	105½	93½	103½	—
4% Deb.	110	99	108½	—
5% Deb.	121	109½	112½	—
2½% Deb.	63½	54	62	—
5% Rt. Charge	117	104	111½	—
5% Cons. Guar.	111	96½	106	+1½
L.M.S.R.				
Ord.	17	9½	13½	+½
4% Pref. (1923)	46½	20	36	—½
4% Pref.	63½	37½	48½	—
5% Red. Pref. (1955) ..	83	58½	73½	—
4% Deb.	98½	85	98½	+4½
5% Red. Deb. (1952) ..	109	101½	106	—
4% Guar.	87½	73	81	+2
L.N.E.R.				
5% Pref. Ord.	5½	3½	3½	+½
Def. Ord.	3½	1½	1½	—
4% First Pref.	38½	19	33½	+1
5% Red. Pref.	15	7	10	—½
5% Red. Pref. (1955) ..	55	38	50	—
4% First Guar.	78½	60	70½	+1½
4% Second Guar.	68½	47	58	—
3% Deb.	71½	57	68½	+4½
4% Deb.	93	76	83	—
5% Red. Deb. (1947) ..	106½	98	102	—
4½% Sinking Fund Red. Deb.	104½	96	100½	—
SOUTHERN				
Pref. Ord.	78	46½	44½	+1
Def. Ord.	19½	7	10½	+½
5% Pref.	100	76	76	+1½
5% Red. Pref. (1964) ..	102½	94	87½	—
5% Guar. Pref.	116½	103	106	+½
5% Red. Guar. Pref. (1957) ..	112½	102½	102½	—
4% Deb.	103	91½	99	+4
5% Deb.	118½	109½	110½	—
4% Red. Deb. (1962-67) ..	106	98	101½	—
4% Red. Deb. (1970-80) ..	102	96	100½	—
FORTH BRIDGE				
4% Deb.	98½	81	87½	—
4% Guar.	95	80	85½	—
L.P.T.B.				
4½% "A"	115	103	106	—
5% "A"	123	106½	114½	+1½
4½% "T.F.A."	105	100½	103	—
5% "B"	117½	102	102½	-2
"C"	84	63½	28½	+1½
MERSEY				
Ord.	24½	17½	20½	—
4% Perp. Deb.	93½	88½	89	—
3% Perp. Deb.	77	65½	59½	—
3% Perp. Pref.	55	49½	54½	—
IRELAND				
BELFAST & C.D.				
Ord.	6	3	4	—
G. NORTHERN				
Ord.	6	2½	3	—
G SOUTHERN				
Ord.	13½	8	5	—
Pref.	26	10	16	—
Guar.	40½	22	18	—½
Deb.	57	45½	44	—½

Irish Traffic Returns

IRELAND		Totals for 43rd Week			Totals to Date		
		1940	1939	Inc. or Dec.	1940	1939	Inc. or Dec.
		£	£	£	£	£	£
Belfast & C.D. (80 miles)	pass.	2,974	2,186	+ 788	143,062	114,771	+ 28,291
	goods	798	628	+ 170	26,128	20,220	+ 5,908
	total	3,772	2,814	+ 958	169,190	134,991	+ 34,199
Great Northern (543 miles)	pass.	11,350	9,000	+ 2,350	534,050	495,100	+ 38,950
	goods	17,950	14,800	+ 3,150	565,300	468,250	+ 97,050
	total	29,300	23,800	+ 5,500	1,099,350	963,350	+ 136,000
Great Southern (2,076 miles)	pass.	29,321	28,902	+ 419	1,545,035	1,623,460	- 78,425
	goods	58,403	63,523	- 5,120	2,016,570	1,886,944	+ 129,626
	total	87,724	92,425	- 4,701	3,561,605	3,510,404	+ 51,201
L.M.S.R. (N.C.C.) (247 miles)	pass.	4,530	4,000	+ 530	247,340	205,140	+ 42,200
	goods	6,310	3,520	+ 2,790	175,910	130,390	+ 45,520
	total	10,840	7,520	+ 3,320	423,250	335,530	+ 87,720

OFFICIAL NOTICES

Buenos Ayres Western Railway Company Limited

THE Directors of the Buenos Ayres Western Railway Limited hereby give notice that the Register of Debenture Stockholders of the Company will be closed from Monday, the 11th November, to Monday, the 18th November, 1940, both days inclusive.

By Order of the Board,
N. F. E. GREY,
Secretary.

Offices of the Company,
River Plate House,
Finsbury Circus,
London, E.C.2.

Buenos Ayres Great Southern Railway Company Limited

THE Directors of the Buenos Ayres Great Southern Railway Company Limited hereby give notice that the Register of Debenture Stockholders of the Company will be closed from Monday, the 11th November, to Monday, the 18th November, 1940, both days inclusive.

By Order of the Board,
N. F. E. GREY,
Secretary.

Offices of the Company,
River Plate House,
Finsbury Circus,
London, E.C.2.

OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Wednesday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W. 1.

Contracts and Tenders

The following contracts have been placed by the South Indian Railway to the inspection of Messrs. Robert White & Partners:—

William Beardmore & Co. Ltd.: 190 locomotive tyres; and 145 carriage and wagon tyres.

P. & W. MacLellan Limited: 6½ tons of steel hoops.

The Sunagadh State Railway has placed the contracts below to the inspection of Messrs. Robert White & Partners:—

I.C.I. Metals Limited: 3½ tons copper rods; 3 copper firebox backplates; ½ copper sheets.

North British Locomotive Co. Ltd.: Miscellaneous spare parts for locomotives.

A.B.C. Coupler Co. Ltd.: Metre-gauge buffers and details (miscellaneous).

Railway & General Stores Contractors: 5 cwt. tin ingots.

Eyre Smelting Co. Ltd.: 10 cwt. white metal.

The Peruvian Corporation has placed an order with Walker Brothers, of Wigan, for a bogie with cab and a trailing bogie.

The United States railways are expected to buy nearly 100,000 new wagons within the next twelve months, as recommended by the Car Service Division of the Association of American Railroads, states Reuters Trade Service from New York. The acquisition of these vehicles by October 1, 1941, was recommended recently by the Car Service Division, after a survey of prospective equipment needs.

In conducting the study, the Car Service Division surveyed the needs of every individual railway. The conclusion was reached that the industry as a whole should have by October 1, 1941, at least 1,680,000 wagons, of which at least 94 per cent., or 1,579,200, should be in operating condition. To reach this goal, the acquisition of about 100,000 wagons was indicated. The division then suggested to each individual line the number and type of wagons it should buy.

On September 15 of this year, the U.S.A. railways owned 1,641,087 wagons, but 136,473 of these or about 8.3 per cent., were not in working condition. This leaves a total of 1,504,614 wagons available for operation, or about 75,000 less than the estimated minimum requirements a year from now. The purchase of 75,000 more wagons, however, would not provide the minimum number believed necessary by October 1 next year because during the next twelve months many thousands of old wagons will be retired in the normal course of operations.

The South African Railways & Harbour Administration is calling for tenders (Tender No. 2910) for the supply and delivery of 3-ton, four-wheel, welded frame road trailers. Quotations are required for quantities ranging from 1 to 80. Tenders endorsed "Tender No.

2910: Trailers" should reach the Secretary to the Tender Board, Room No. 31, South African Railways & Harbours, or P.O. Box 7784 Johannesburg by 1 p.m. on December 2, 1940. Local representation is essential.

Staff and Labour Matters**Schedule of Reserved Occupations**

The Minister of Labour & National Service announced on October 31 a number of changes in the schedule of reserved occupations, including the reservation at age 25 of railway clerks who are employed as relief station-masters or as relief control staff. These reservations are not retrospective in their effect, that is, they do not release men now in the forces, or men who have already received enlistment notices.

Wages in the Electrical Contracting Industry

The National Joint Industrial Council for the Electrical Contracting Industry has declared that as from the second pay day in November, 1940, for the pay period covered by that pay day, the cost of living (war) addition shall be 11s. 8d. a week and that such addition shall remain current until further notice. This represents an increase of 1s. 3d. a week.



The rolling-stock changeover on the Waterloo and City tube, Southern Railway, showing old stock on the left and new on the right. The line was closed during the weekend from the afternoon of October 25 until October 28 to facilitate the changeover. We hope to publish a full description of the line in our November 15 issue

Railway Stock Market

Cheerful and slightly more active conditions have developed in the stock and share markets, where sentiment benefited from the Prime Minister's speech and also from encouraging views as to the latest war news. In many directions, stocks remained very firmly held, and the upward movement in prices was out of proportion to the demand experienced, but, on the other hand, there was very little selling in evidence. British Funds were strong, and there was improvement in demand for other high-class investments, which it is thought, will attract a good proportion of the proceeds arising from the requisitioning of Canadian securities. In this connection it is expected in many quarters that home railway debentures may come in for considerable attention, because, despite their recent improvement, they still offer very favourable yields, when compared with those obtainable on stocks with equal investment merits. Home railway junior stocks have also participated in the better market tendency on the increase in railway charges and also on the belief that in respect of the current year the railways seem likely to receive rather more than the minimum net amounts guaranteed by the Exchequer. It is hoped, however, that any revision of the financial agreement between the com-

panies and the Government will be arrived at before the early part of 1941 when the dividend decisions fall to be made.

Demand was in evidence for L.M.S.R. 4 per cent. debentures, which as compared with a week ago, have moved up four points to 98½. Moreover, the guaranteed stock improved from 78½ to 80½ and would still appear to give an attractive yield. L.M.S.R. senior preference was slightly lower on balance at 48½, but the 1923 preference made the better price of 36, and the ordinary stock at 13½ was also half-a-point higher as compared with a week ago. Great Western ordinary stock reflected the prevailing trend with a rise from 33 to 34½, while the 5 per cent. preference was two points higher at 78, and the guaranteed stock at 106 also moved in favour of holders, as did the 4 per cent. debentures, which at 104½ were a point better on balance.

Among L.N.E.R. issues, the first preference rallied to 34, but would still appear to be relatively undervalued. On the other hand, the second preference remained at 10, while the preferred and deferred stocks were 3½ and 1½ respectively. L.N.E.R. first guaranteed, which was 68½ a week ago, has since appreciated to 70½; the second guaranteed improved from 58½ to 60½. Both classes of guaranteed stocks

would seem to be very moderately priced, bearing in mind that during the period of the war it appears unlikely the cover for their dividends will be reduced, and that moreover their dividends are cumulative. L.N.E.R. debentures benefited from the upward tendency in prior charges, and the 3 per cents. were 68½, while the 4 per cents. were also higher at 88. Southern 4 per cent. debentures rose strongly from 95½ to 99. Southern guaranteed was higher at 106, while the preference stock was 76, compared with 74½ a week ago. Further, the preferred rose from 43 to 44½, and the deferred stock at 10½ has also moved in favour of holders. London Transport "C" stock reflected the general trend, and was 28, compared with 27½ a week ago.

Despite the better tendency in the stock markets, Argentine railway securities remained inactive, but few sellers were reported. The disposition is to assume that current prices more than discount the adverse factors, but it is realised that it should be much easier to assess the position when the forthcoming annual reports and statements at the meetings are available. There was further buying of Canadian Pacific debenture and preference stocks; the last-named further rallied to 43½.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1939-40	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to Date			Shares or Stock	Prices						
			Total this year	Inc. or Dec. compared with 1939		Totals		Increase or Decrease		Highest 1939	Lowest 1939	Nov. 5, 1940	Yield % (See Note)			
						This Year	Last Year									
			£	£		£	£	£								
South & Central America	Antofagasta (Chili) & Bolivia	834	27.10.40	13,870	—	4,650	43	731,270	579,420	+ 151,850	Ord. Stk.	10½	4½	5½	NII	
	Argentine North Eastern	753	26.10.40	ps. 161,500	—	ps. 6,900	17	ps. 2,957,400	ps. 3,019,100	—	ps. 61,700	4½	2	2	NII	
	Bolivar	174	Sept. 1940	3,790	—	510	39	35,790	38,350	—	2,380	7½	5½	6½	NII	
	Brazil	—	—	—	—	—	—	—	—	—	Bonds.	5½	4½	6*	NII	
	Buenos Ayres & Pacific	2,801	26.10.40	ps. 1,090,000	—	ps. 33,000	17	ps. 19,014,000	ps. 20,741,000	—	ps. 1,727,000	Ord. Stk.	5½	2	2	NII
	Buenos Aires Central	190	10.8.40	899,500	—	\$31,600	6	\$557,500	\$647,500	—	\$90,000	—	—	—	NII	
	Buenos Ayres Gt. Southern	5,082	26.10.40	ps. 1,927,000	—	ps. 280,000	17	ps. 31,621,000	ps. 32,935,000	—	ps. 1,314,000	Ord. Stk.	13½	4½	4½	NII
	Buenos Ayres Western	1,930	26.10.40	ps. 690,000	—	ps. 58,000	17	ps. 10,683,000	ps. 11,861,000	—	ps. 1,178,000	—	10½	4	2½	NII
	Central Argentine	3,700	26.10.40	ps. 1,351,100	—	ps. 343,500	17	ps. 23,712,950	ps. 33,101,950	—	ps. 9,389,000	—	11½	4	2½	NII
	Do.	—	—	—	—	—	—	—	—	—	Ord.	4	1½	2	NII	
	Cent. Uruguay of M. Video	972	26.10.40	23,650	—	6,509	17	314,781	287,120	+	27,661	Ord. Stk.	2½	—	1½	NII
	Costa Rica	188	May 1940	17,282	—	7,020	48	193,339	245,516	—	52,177	Stk.	24½	18	17½	11½
	Dorada	70	Sept. 1940	12,200	—	2,200	39	110,700	123,700	—	13,000	1 Mtr. Db.	104½	102	98	6½
	Entre Rios	810	26.10.40	ps. 217,600	—	ps. 20,700	17	ps. 4,028,400	ps. 4,536,000	—	ps. 507,600	Ord. Stk.	6	3	1½	NII
	Great Western of Brazil	1,016	26.10.40	13,600	—	1,400	43	429,000	357,700	+	71,300	Ord. Sh.	3/-	1/2½	—	NII
	International of Cl. Amer.	794	Aug. 1940	\$354,854	—	\$70,916	35	\$4,079,630	\$4,123,397	—	\$43,767	—	—	—	—	NII
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	—	—	1st Pref.	7½d.	7½d.	—	NII
	La Guaira & Caracas	22½	Oct. 1940	6,795	+	1,180	43	67,095	60,725	+	6,370	—	—	—	—	NII
	Leopoldina	1,918	19.10.40	27,288	—	3,141	42	961,659	868,452	+	93,207	Ord. Stk.	2½	—	—	NII
	Mexican	483	21.9.40	ps. 239,100	—	ps. 13,100	12	ps. 3,113,600	ps. 3,278,600	—	ps. 165,000	—	1½	—	—	NII
	Midland of Uruguay	319	Sept. 1940	11,468	—	2,820	13	32,831	26,138	+	6,693	—	—	—	—	NII
	Nitrato	386	31.10.40	5,987	—	1,532	43	146,671	98,199	—	48,472	Ord. Sh.	2½	1½	1½	7½
Paraguay Central	274	26.10.40	\$3,229,000	—	\$468,000	17	\$59,848,000	\$56,215,000	+	\$3,633,000	Pr. Li. Stk.	45½	36	38	15½	
Peruvian Corporation	1,059	Sept. 1940	63,848	—	2,527	13	198,447	192,214	—	6,233	Pref.	1½	—	1½	NII	
Salvador	100	14.9.40	9,022	—	<1,771	11	<102,204	<113,281	—	<11,077	—	—	—	—	NII	
San Paulo	153½	20.10.40	35,625	—	589	16	1,526,134	1,370,383	+	155,751	Ord. Stk.	38	20	29½	8½	
Taitai	160	Aug. 1940	2,465	—	335	9	4,550	3,685	+	865	Ord. Sh.	—	6/6	—	9½	
United of Havana	1,353	26.10.40	13,977	—	2,718	17	262,315	306,386	—	44,071	Ord. Stk.	2	—	—	NII	
Uruguay Northern	73	Sept. 1940	970	—	63	13	2,870	2,683	+	187	—	—	—	—	NII	
Canada	Canadian National	23,695	21.10.40	1,040,396	—	1,905	42	38,695,530	31,467,404	+	7,228,126	—	—	—	—	NII
	Canadian Northern	—	—	—	—	—	—	—	—	—	4 p.c.	—	—	—	—	NII
	Grand Trunk	—	—	—	—	—	—	—	—	—	Perp. Dbs.	74½	60	74	5½	
	Canadian Pacific	17,153	31.10.40	1,178,600	—	174,400	43	27,729,800	24,422,600	+	3,307,200	4 p.c. Gar.	100½	76	102	3½
India	Assam Bengal	1,329	30.4.40	45,187	+	6,529	4	135,060	120,437	+	14,623	Ord. Stk.	76½	60	77½	3½
	Barsi Light	202	10.9.40	2,160	—	345	23	66,780	53,557	+	13,223	—	—	—	—	NII
	Bengal & North Western	2,091	Sept. 1940	223,650	+	46,363	26	1,485,502	1,253,721	+	231,790	Ord. Stk.	277	229½	240	6½
	Bengal Dooars & Extension	161	Sept. 1940	14,625	—	508	26	78,405	66,243	+	12,162	—	91	84½	212½	3½
	Bengal-Nagpur	3,269	10.8.40	204,075	+	16,707	19	3,079,954	2,834,428	+	245,526	—	94½	83½	92½	4½
	Bombay, Baroda & Cl. India	2,986	20.10.40	246,075	—	23,400	28	5,274,150	4,686,675	+	587,475	—	108	90	104	5½
	Madras & Southern Mahratta	2,967	10.9.40	134,775	—	9,101	23	2,679,368	2,628,099	+	51,269	—	104½	92	99½	7½
	Rohilkund & Kumaon	571	Sept. 1940	38,925	+	4,219	26	323,231	259,075	+	64,156	—	280	263	250	6½
	South Indian	2,542	31.8.40	141,999	—	15,230	22	1,886,085	1,744,132	+	141,953	—	102½	88	84½	5½
	Various	Beira	204	Aug. 1940	85,336	—	—	48	832,782	—	—	—	—	—	—	—
Egyptian Delta		623	31.7.40	5,048	—	—	18	56,624	61,673	—	5,049	Prf. Sh.	—	—	—	NII
Kenya & Uganda		1,625	—	—	—	—	—	—	—	—	—	—	—	—	—	NII
Manila		—	—	—	—	—	—	—	—	—	B. Deb.	55	39	47½	7½	
Midland of W. Australia		277	July 1940	11,397	+	139	4	11,397	11,258	+	139	Inc. Deb.	91½	87½	82½	4½
Nigerian		1,900	31.8.40	27,727	+	3,258	22	783,893	601,488	+	182,405	—	—	—	—	NII
Rhodesia		2,442	Aug. 1940	512,446	—	—	49	4,428,678	—	—	—	—	—	—	—	NII
South Africa		13,287	28.9.40	725,395	—	51,564	26	17,590,535	16,798,269	+	792,266	—	—	—	—	NII
Victoria	4,774	July 1940	868,428	—	183,538	4	868,428	684,890	+	183,538	—	—	—	—	NII	

Note. Yields are based on the approximate current prices and are within a fraction of ½. Argentine traffic is now given in pesos
 * Quotation is of June 17, 1940; dealings subsequently prohibited
 † Receipts are calculated @ 1s. 6d. to the rupee